Commonwealth of Kentucky
Cabinet for Health and Family Services

First Update: Kentucky Strategic and Operational Plan for Health Information Exchange

KHIE
KENTUCKY HEALTH INFORMATION EXCHANGE

GOVERNOR'S OFFICE OF ELECTRONIC HEALTH INFORMATION (GOEHI)

Kentucky UNBRIDLED SPIRIT

TABLE OF CONTENTS

I. CHANGES IN KENTUCKY HEALTH INFORMATION EXCHANGE STRATEGY

1.1 - CHANGES IN HEALTH INFORMATION EXCHANGE STRATEGY

The original strategic and operational plan for the Kentucky Health Information Exchange (KHIE) was submitted to the Office of the National Coordinator (ONC) on August 29, 2010 and approved in February, 2011. The executive summary from the original plan is as follows:

The KHIE Cooperative Agreement Grant represents an unprecedented opportunity to advance the use of electronic health information exchange and support healthcare providers and organizations across the Commonwealth of Kentucky in achieving Meaningful Use. To this end, Governor Steve Beshear issued an Executive Order in August 2009 establishing the Governor's Office of Electronic Health Information (GOEHI) in the Cabinet for Health and Family Services (CHFS) for advancing health information exchange in Kentucky. The Commonwealth's first State Health Information Technology (HIT) Coordinator, who serves as the GOEHI Executive Director, was hired in May 2010. The first meeting of the Kentucky Health Information Exchange Coordinating Council (KYHIECC/Coordinating Council) was held on May 28, 2010.

The creation of the KYHIECC and six committees which support the Coordinating Council acknowledges the role of state government in assuring statewide access to Health Information Exchange (HIE) to support Meaningful Use while being mindful of the fact that government simply cannot do it alone. A strong public-private partnership in which each stakeholder accepts responsibility and commits to the effort is required to support a venture of this magnitude. The six committees of the Coordinating Council are: 1) *Accountability and Transparency Committee*; 2) *Business Development and Finance Committee*; 3) *Interoperability and Standards Development Committee*; 4) *Provider Adoption and Meaningful Use Committee*; 5) *Privacy and Security Committee*; and 6) *Population Health Committee.*

The Kentucky Strategic and Operational Plan for HIE is the first product of this collaborative governance structure for the KYHIECC members set aside time from their busy schedules to study the issues and prepare a written set of recommendations which were used in the development of the Plan. The Plan is largely a product of their work and the next step in advancing the vision for health IT in Kentucky that will lead to improved health outcomes, quality of care, safety and efficacy, and population health across the Commonwealth.

The Plan addresses the ONC requirements as specified in the Funding Opportunity Announcement (FOA), Grantee Requirements issued by ONC in March 2010, and the July 6, 2010 Program Information Notice (PIN) from ONC. The Operational Plan includes a detailed cross walk that links the proposed strategies to the ONC requirements, including the key accomplishments to be met in the first two years.

The Strategic Plan describes the current health IT landscape in Kentucky. While noting the immediacy of the task and the challenges that lie ahead, the Plan describes the collaboration that will occur with the Regional Extension Centers (RECs) and other state and community-based resources as local expertise is mobilized to support adoption of Electronic Health Records (EHRs), connectivity to HIE, integration of e-prescribing, bi-directional exchange of laboratory information, and exchange of patient care summaries into clinical practice. The Operational Plan identifies the actions that need to occur to expedite the deployment of HIE and assure that healthcare providers and organizations have at least one option to use in meeting Stage 1 Meaningful Use. It also describes the steps that will be taken to develop public trust, assure privacy and security, and build financial sustainability for the KHIE.

The KHIE is a public good that will create value and serve the needs of all Kentuckians. For this reason, the *Population Health Committee* recommended, and the Coordinating Council agreed, that the following principles should underscore the business, technology, and operation of the KHIE:

- The focus of the KHIE is on improving the health, quality and safety of healthcare for Kentucky's residents and visitors through the provision of a statewide, interoperable health information exchange.
- Secure exchange of health information is essential to transforming healthcare and protecting and improving population health and must supersede technical, business, and bureaucratic barriers.
- The KHIE must initially provide for the functionality necessary to support meaningful use, and expand over time to provide for continuous quality improvement in quality and coordination of care.
- The value of information increases with use, and the value of one set of information increases when linked with other information.
- Consumption of health information exchange services by one stakeholder does not reduce availability for others, and no healthcare stakeholder can be effectively excluded from appropriately using interoperable health information exchange services.

1.2 – UPDATE FOR 2012-2013

Kentucky has held fast to this original vision and strategy for the development of KHIE. There certainly have been a number of unforeseen challenges over the past two years, primarily technology and vendor issues, however KHIE continues to follow the path set forth in the original Strategic and Operational Plan. These issues have <u>not</u> resulted in a change to HIE strategy, however they have impacted the original timeline (as noted in the project plan section of this update).

Despite these challenges KHIE has seen the majority of the original vision and plans begin to materialize. The collaboration with the other programs across the state supported by the Health Information Technology for Economic and Clinical Health Act of 2009 (HITECH) has been tremendously successful, resulting in a very coordinated outreach effort to Kentucky providers.

II. PROGRAM EVALUATION

3.1. - OVERVIEW

Under the guidance of the KHIE Coordinating Council, as the State-Designated Entity (SDE) under the Cooperative Agreement Grant, GOEHI has established an approach that encourages the broadest development of health information exchange across the Commonwealth. This ensures that providers have affordable and functional options to meet Meaningful Use, while allowing the market to efficiently and organically evolve. This approach and strategy is based upon an expectation that health information exchange will consist of a network of networks.

Central to this strategy is the development of KHIE, a flexible and robust core network which acts as a foundation for the evolution of exchange across the Commonwealth. KHIE connects to all entities on a non-discriminatory basis. This network provides a low cost solution that fills potential gaps in coverage areas while providing unique, differentiated, and valuable services to broad constituencies. The value associated with these services provides the foundation for its sustainability.

In addition, public policy levers have been actively used to encourage health information exchange. They include the integration of KHIE with the Kentucky Department of Medicaid Services (DMS) and the Kentucky Department of Public Health (DPH). Medicaid patients in Kentucky are served by four managed care organizations (MCOs) that are required to connect to KHIE. Connection to various registries, disease registries, and the new birth registry are also core network functions.

KHIE has worked in a highly coordinated fashion with the Kentucky REC in assisting providers in reaching Meaningful Use. This includes joint outreach initiatives and conferences. The KHIE and Kentucky REC cooperation has been a major element in the success of health information exchange in the Commonwealth.

TABLE 3.1: HEALTH INFORMATION EXCHANGE IN KENTUCKY

Entity	Type	Activity
Kentucky Health Information Exchange	State Designated HIE	181 Signed Participation Agreements (324 Locations) 54 LIVE Connections
HealthBridge	HIO	6 hospitals, more than 70 practices (all live)
Northeast Kentucky RHI0	HIO	2 hospitals, 16 ambulatory sites
LouHIE	HIO	No Active Exchange
6 Hospital Systems	IDN	Internal and Affiliates
Norton Healthcare/Humana	ACO	For Employees
Direct	Directed Exchange	Very Limited

As depicted in Table 3.1, KHIE provides the majority of health information exchange activities within Kentucky. There is one active HIO in Kentucky, Cincinnati-based HealthBridge, which provides services in five counties in Northern Kentucky, an area served by one large provider network. HealthBridge and KHIE established the basis for interconnection in May, 2012. Two

other HIOs, the Northeast Kentucky RHIO and the Louisville HIE, are in existence, but do not provide active exchange at this point.

Large providers are in the process of implementing health information exchange within their organizations. As evidenced by the network log analysis in this Assessment, the degree of data sharing through KHIE with non-affiliated entities varies by provider, and has been somewhat limited. Several large providers have connected to KHIE, but are electing to complete their internal networks before pushing data. Summary statistics for KHIE traffic are provided in Table 3.2.

TABLE 3.2: KHIE SUMMARY TRAFFIC STATISTICS (May 31, 2012)	
Statistics (CCD Technology)	
Total Queries:	100,301
Total Documents Returned:	61,486
Currently Averaging:	25,075 queries per week
Response Time (calculated for the period above)	
CCD Returned:	11.2 seconds
No CCD Returned:	10.0 seconds
ADT Transactions:	2,533,609
Lab Transactions:	520,282
Statistics (VHR Technology)	
Total Records:	288,363

Summary statistics for HealthBridge HIE traffic generated by Kentucky providers during CY 2011 are provided in Table 3.3. The statistics for Direct users reported by HealthBridge include all providers in the tri-state area of KY, OH and IN using Direct services offered through HealthBridge.

TABLE 3.3: HEALTHBRIDGE SUMMARY TRAFFIC STATISTICS (CY 2011)	
Activity/Measure	**Output**
Data Providers:	6 hospitals, multiple commercial labs
KY physicians electronically connected:	1,200 in more than 70 practices
Electronic results delivery:	4,800,000 results sent (ADT, LAB, RAD, TRAN)
Electronic lab orders:	47,000 orders sent
Total Direct Users at end of 2011:	78 (includes all KY, OH, and IN users)
Direct messages sent at end of 2011L	7,500 (includes all KY, OH, and IN messages)

Summary statistics for Northeast Kentucky RHIO traffic generated are provided in Table 3.4.

TABLE 3.4: NORTHEAST KENTUCKY RHIO SUMMARY TRAFFIC STATISTICS (CY 2011)	
Activity/Measure	**Output**
Connected Physicians:	16 ambulatory clinics
Electronic results delivery:	142,519

There are no CMS-designed Accountable Care Organization (ACO) initiatives underway in the Commonwealth. One ACO has been announced by Humana and Norton Healthcare. This ACO is for the employees of the two organizations. Northern Kentucky has been included in a CMS payment reform effort, the *Comprehensive Primary Care Initiative*, which also includes the Greater Cincinnati-Northern Kentucky and Dayton regions in a multi-payer initiative.

Within Kentucky, the only activity under the Direct Project is by HealthBridge. HealthBridge has used Direct to implement directed exchange in transition-in-care use cases in conjunction with a Beacon Grant. HealthBridge is using Direct Mail to deliver alerts to practices participating in a new Emergency Department Admit Alert system funded through the Beacon Community Program. Other health information exchange activities within Kentucky include electronic result delivery, e-prescribing, electronic lab order entry, disease registry, and electronic reporting. These are analyzed in this Assessment.

Patient engagement through health information exchange is in the initial stages of development. The specifications under the KHIE infrastructure vendor contact require the establishment of a patient portal. KHIE also intends to support the Blue Button initiative. In terms of governance, the Coordinating Council has established the *Accountability and Transparency Committee* with a role that includes consumer advisory and consumer advocacy. According to data provided by the National Ambulatory Medical Care Survey (NAMCS) and the American Hospital Association (AHA), approximately 31% of physicians in ambulatory locations and 45% of hospitals in Kentucky are capable of providing patients with electronic copies of clinical summaries or health records, but the preponderance of these are through a physical medium.

3.2 - EVALUATION FRAMEWORK

The following program priority areas are analyzed relative to KHIE's approaches and strategies, conditions supporting and hindering use, performance, and lessons learned:

1. Laboratories participating in delivering electronic structured lab results
2. Pharmacies participating in e-prescribing
3. Providers exchanging patient summary of care records
4. Critical success factors to health information exchange implementation and use across the continuum of care
5. Health information exchange economic sustainability
6. Impact on clinical outcomes (proof of concept)

The priority areas are addressed through specific research questions and the use of multiple complimentary methodologies. In developing research questions and methods, in addition to requirements and suggestions for ONC, an extensive literature review was undertaken, as well as consultation with the Coordinating Council, other stakeholders, and GOEHI staff. Each of the program priority areas has specific research questions which are then explicated into operational definitions for the purpose of analyses.

The assessment of health information exchange in the Commonwealth of Kentucky and the performance under the Cooperative Agreement Grant is being done within a very applied and focused context. The research has a duality of nature, in both providing an assessment under a rigorous research design, while at the same time performing the applied function of market research to inform the business processes of KHIE. A summary of the research design is provided in Appendix D.

Outcomes are assessed within this process of continued HIE evolution. Data are collected longitudinally across the research questions with written assessment reports provided on an interim basis. These assessments are used in ongoing business planning and market research functions.

Table 3.5 provides a summary of the key evaluation questions.

TABLE 3.5: KEY EVALUATION QUESTIONS	
Key Evaluation Questions	**Area**
1. How many laboratories are participating in delivering electronic structured lab results?	HIE facilitation and expansion
2. How many pharmacies are participating in e-prescribing?	HIE facilitation and expansion
3. How many providers exchange summary of patient care records?	HIE facilitation and expansion
4. What is the volume of data being exchanged?	HIE facilitation and expansion
5. What are the frequency and characteristics of use?	Implementation and use
6. Why do clinicians choose not to use health information exchange if it is available?	Implementation and use
7. What is the overall satisfaction level for users?	Implementation and use
8. What services can KHIE provide (e.g., help desk, training) to facilitate the use of health information exchange?	Implementation and use
9. How are policy levers being used to support and encourage health information exchange?	Implementation and use
10. What patient engagement initiatives are being supported?	Implementation and use
11. How do the governance and organizational structures of KHIE compare to traditional health information exchanges and structures established under other state cooperative agreements and what are the implications for health exchange sustainability?	Implementation and use/ Economic sustainability
12. How is the evolution of enterprise HIEs, regional HIOs, Accountable Care Organizations and vendor HIEs impacting the sustainability of health information exchange and how is KHIE being used to compliment these initiatives?	Economic sustainability
13. How is KHIE positioned relative to third party applications and services that enhance the value proposition, increase revenues and support meaningful use and other requirements?	Economic sustainability
14. What are the reliability and validity assumptions that underlie the business model and sustainability plan for services offered by KHIE?	Economic sustainability
15. Seventeen clinical outcome questions were developed per three disease states and tested with a limited sample under the MTG (Appendix F)	Clinical outcomes

3.3 - EVALUATION METHODS

The rapid introduction of health information exchange and the inherent complexity of service offerings require continual and controlled measurement and analysis of what is a moving target. The processes driving the assessment approach and research methods were established under the oversight and guidance of the Coordinating Council. The evaluation plan uses multiple methodologies to address each research question allowing for a degree of triangulation which supports the validity and reliability of the findings. This approach consists of server log analysis, focus groups, user surveys, clinical outcomes assessment, and economic analyses. This is done within the larger context of the growing research literature surrounding HIEs, population management, and e-Health in general.

These evaluation methods are built upon those used in the assessment of the Medicaid Transformation Grant which provided the initial funding for the KHIE. This allows the opportunity for the longitudinal measurement of progress across key areas and over two grant programs. Outcomes are assessed within this process of continued HIE evolution. Data are collected longitudinally across the research questions with written assessment reports provided on an interim basis. Appendix D provides a summary of the study design and methodology.

3.4 - RESULTS

Laboratories Delivering Structured Results Electronically Census Results

Under this assessment a census of 132 hospital and 66 independent labs was inaugurated. Following two mailings and follow-up phone calls a response rate of 83% and 67% was achieved for hospital labs and independent labs, respectively for a total of 153 responses. This represents an aggregate response rate of 77%. The full results for the census are in Appendix G.

As depicted in Table 3.6 the percentage of labs which sent results to non-affiliated ambulatory providers using LOINC standards provides a foundation for expansion. In total 40% of responding labs sent some results electronically using LOINC standards and 3.3% sent all of their results in this manner.

TABLE 3.6: LABS IN KENTUCKY USING LOINC WITH NON-AFFILIATED AMBULATORY PROVIDERS (n = 153)

LOINC Messages/Total Messages	Percentage of Labs
0%	52.3%
1-24%	11.1%
25-49%	3.3%
50-74%	6.5%
75-99%	3.3%
100%	3.3%
Don't Know/No Answer	8.5%

In terms of the delivery of structured lab results to non-affiliated ambulatory providers there appears to be some movement toward integration with EHRs or web portals. As shown in Table 3.7, for the responding labs, 44% reported sending results to EHRs and 42% made results available on a web portal, respectively.

TABLE 3.7: LABS IN KENTUCKY SENDING STRUCTURED LAB RESULTS TO EHRs AND WEB PORTALS (n = 153)			
Percent of Messages	Delivery to EHR (%)	Available on Web Portal (%)	Other (%) (printer, fax)
0%	45.8	58.2	13.7
1-24%	12.4	4.6	16.3
25-49%	5.2	2.6	5.9
50-74%	3.9	1.3	8.5
75-99%	7.8	5.9	19.6
100%	5.9	6.5	18.3
Don't Know/No Answer	18.3	19.6	16.3

In terms of identifying the entities used in the exchange of structured lab results, proprietary and third party networks were the dominate entities, although KHIE appears to be making inroads. This is illustrated in Table 3.8.

TABLE 3.8: TYPE OF INFORMATION EXCHANGE USED FOR STRUCTURED LAB RESULTS (n = 167)	
Exchange Network	Response Percent (%)
Kentucky Health Information Exchange	12.0
HealthBridge	0.7
Proprietary Network	23.2
Do not use outside our organization	28.2
Other (specified)	35.9
No Answer	15.0

Pharmacies Participating in e-Prescribing Results

As depicted in Appendix C, the number of pharmacies in Kentucky participating in e-Prescribing is 92% through the SureScripts Network. This is slightly higher than the national average. Physicians using EHRs for e-Prescribing totaled 33% and 47% of physicians reported using any method of e-Prescribing.

Network Log Analysis Results

As the largest provider of health information exchange in Kentucky, KHIE has experienced exponential growth during the past 12 months. Figure 3.1 depicts the growth in the number of new participation agreements executed by KHIE and the number of facilities in the development queue. As of June 11, 2012, there are 181 signed participation agreements which represent 324 locations.

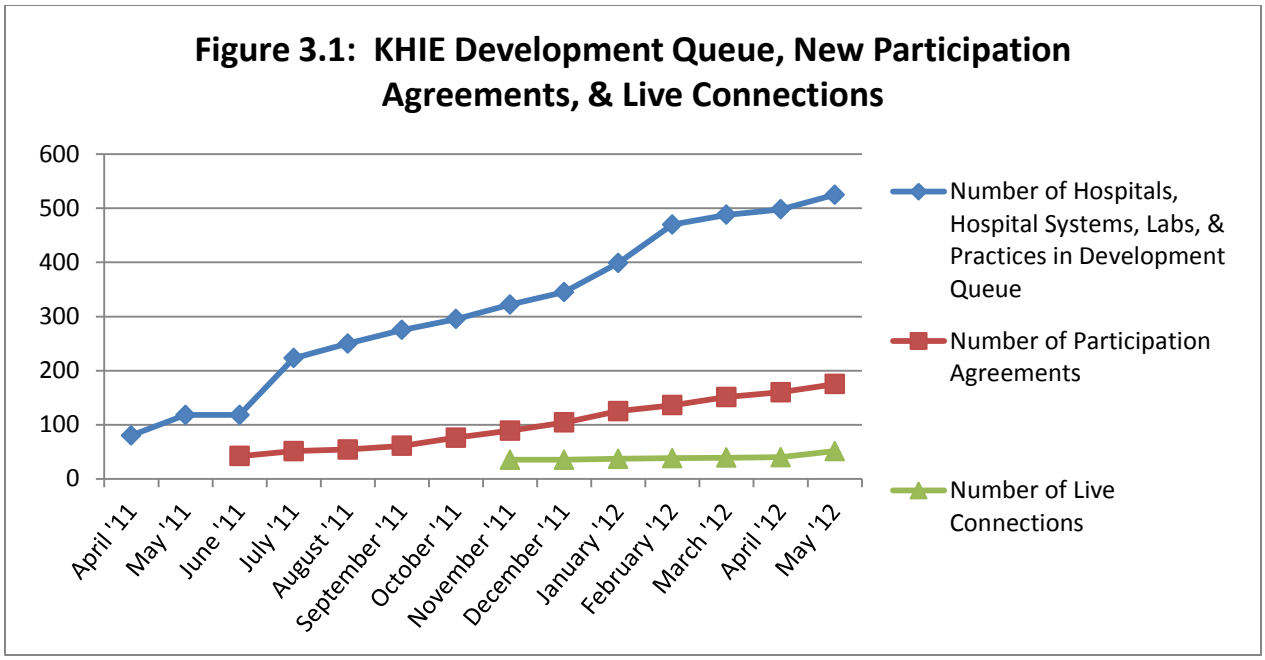


Figure 3.2 depicts the geographic distribution of hospitals that are either connected to KHIE or have a Participation Agreement in process. These hospitals are well distributed across the Commonwealth.

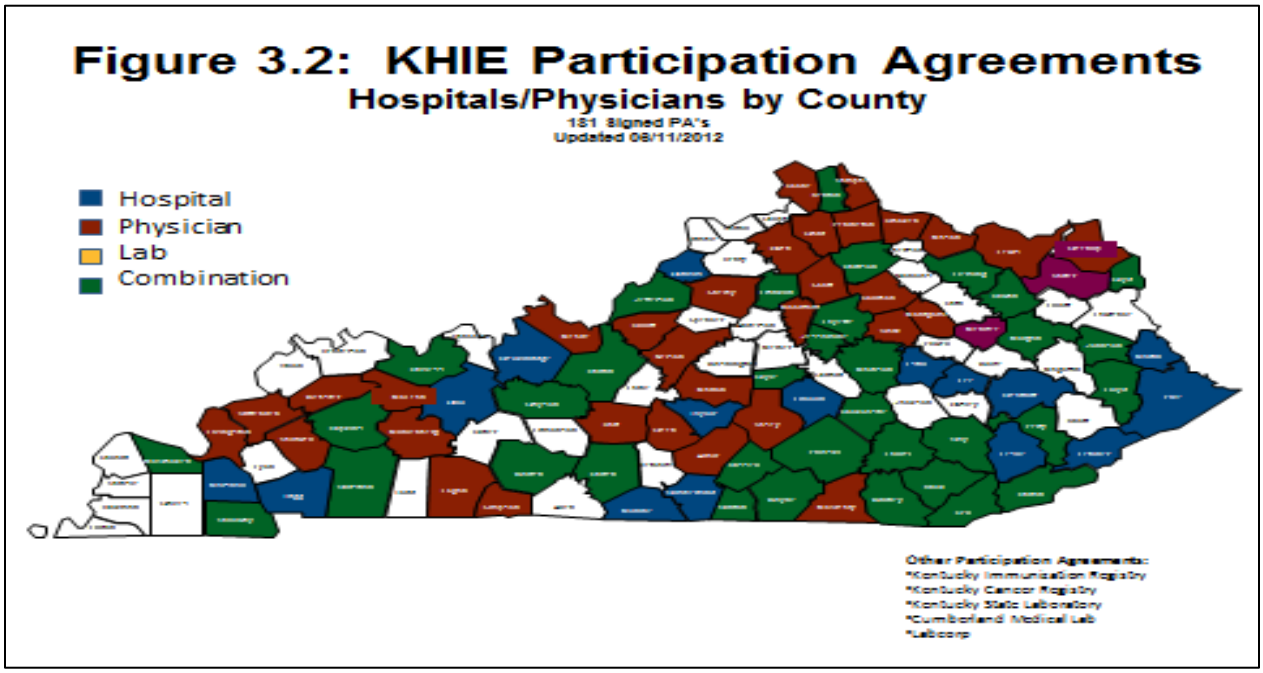
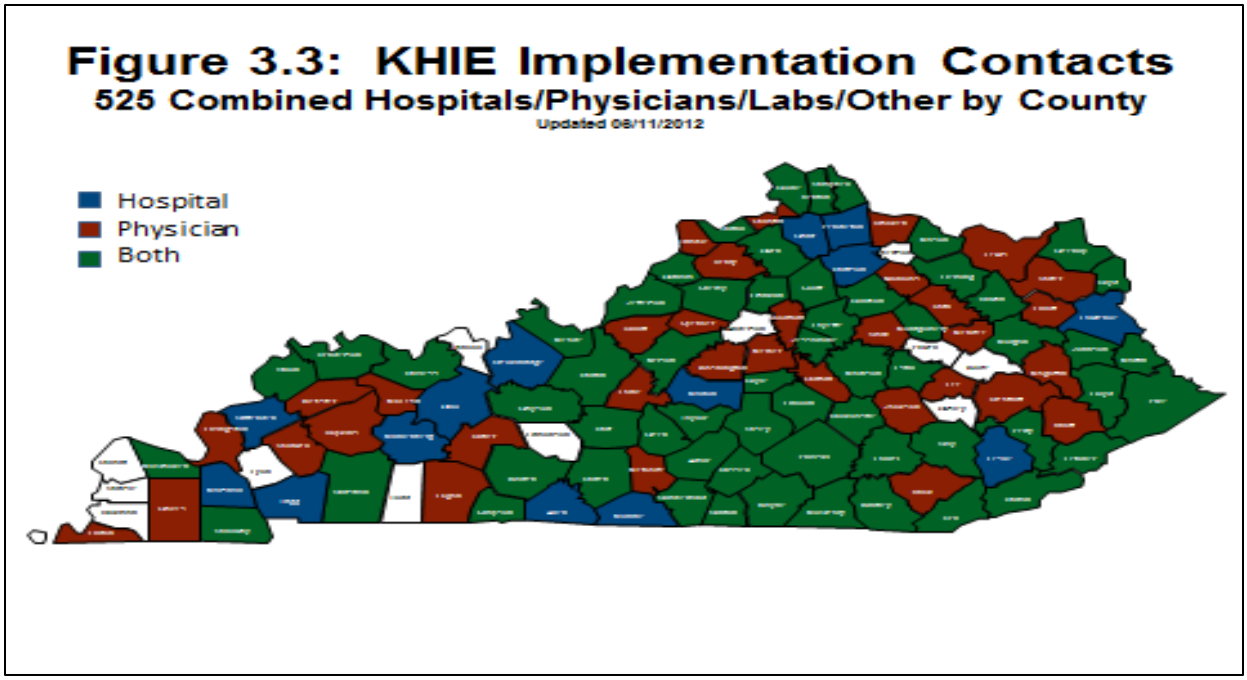


Figure 3.3 depicts the total number of KHIE contacts, ranging from initial discussions to full interconnection, across all categories of stakeholders across the Commonwealth. Once again, the breadth of reach across the Commonwealth is apparent.



An alternative measurement of market penetration uses the Provider as the unit of analysis. Table 3.9 provides an analysis of the market penetration of the Provider universe based upon segmentation by hospital licensed bed size. This segmentation is based upon the recommended subscription fee schedule from the *BD&F Committee*. As depicted, KHIE's greatest penetration rate is with the largest providers. Approximately 75% of hospitals with more than 150 licensed beds are connected to KHIE or are in the provisioning queue. While 38% of hospitals with fewer than 50 beds are connected to KHIE or are in the provisioning queue.

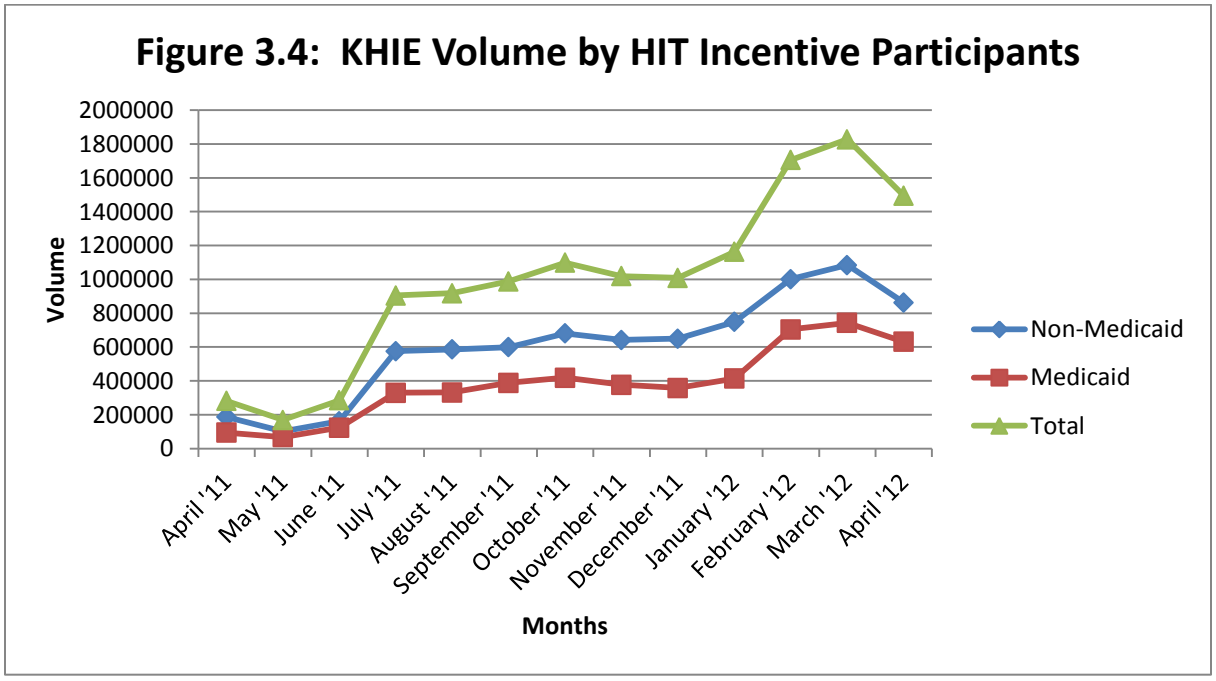
This stratification is likely due to the IT resources and capital available to the larger institutions. Also, the larger institutions are likely better able to deal with the reporting requirements to reach the Meaningful Use incentives. This stratification does suggest the consideration of targeted marketing, targeted support and training, as well as other assistance based upon hospital size.

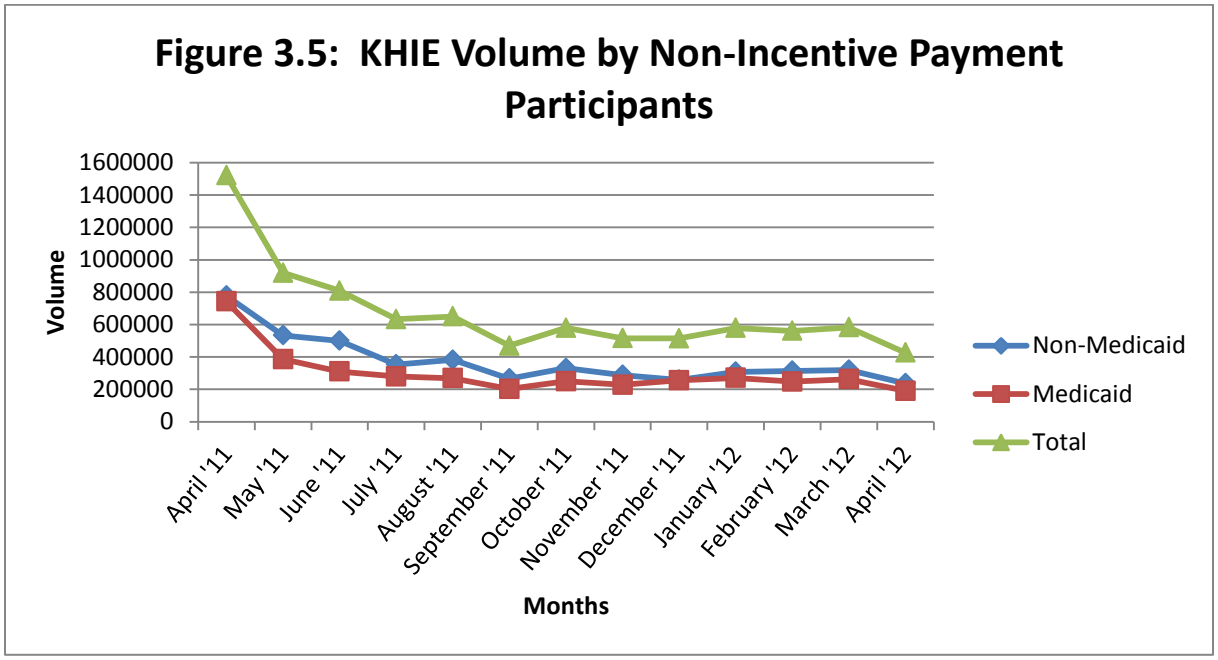
Table 3.9: PENETRATION BY PROVIDER MARKET SEGMENT (LIVE OR SIGNED PA)					
Licensed Beds	**<50**	**51-149**	**150-300**	**301-500**	**>501**
Number of Institutions	15	16	15	9	6
Live on KHIE	27%	25%	53%	56%	50%
Signed Participation Agreement	37%	38%	87%	67%	100%

The fact that large facilities are the early adopters is a great benefit provided that they push data to KHIE. Paralleling the growth of KHIE interconnection are the provider incentive payments made for the Meaningful Use of HIT under CMS guidelines. Meaningful Use requires the use of some type

of a HIE. Providers in the Commonwealth have received $81,339,803 in Medicaid Incentive Payments as of June 11, 2012.

An additional measurement of the growth and KHIE is based on network traffic, defined as data throughput. Figures 3.4 and 3.5 depict the network traffic for connected entities that have received incentive payments and for those that have not yet received incentive payments (AIU and/or MU).





Focus Group Findings

Three focus groups of KHIE users were held during November, 2011 to April 2012. In addition, two focus groups were held in conjunction with the MTG Assessment in April, 2011. The results of the individual focus groups are available in Appendix E. A summary of these findings is provided below:

1. Overall attitudes toward health information exchange were positive
2. The principal problems identified by users are:
    a. The limited number of patients with data
    b. The preponderance of information available is limited to claims data
    c. The CCD is not sortable and data are listed chronologically and contain too much information
    d. At some locations, the interface required a separate sign-on
    e. There is a time lag between diagnosis/treatment and the information appearing on the Exchange
    f. Integration with clinical workflow
3. Significant and beneficial use was identified in transitions-in-care by case managers and other clinical staff
4. Medication reconciliation was a key value proposition identified by pharmacists and physicians
5. Subjects identified the absence of clinical data from referred-to and referring non-affiliated providers as the major barrier to KHIE success

Survey Results

A parallel qualitative research approach is an online survey of KHIE. The survey instrument is available in Appendix F. Attempts were made to recruit clinicians at locations after KHIE had been implemented for at least three months. The lessons learned from this initiative were:

1. Accrual rates were very low. Clinicians may require a financial incentive to participate.
2. Respondents did not appear to differentiate health information exchange from their EHR nor isolate its use within the workflow. Therefore responses tended to reflect attitudes toward and experiences with EHRs and general Health IT.
3. Respondents did not have a clear understanding of health information exchange based upon the description provided in the instrument.
4. With these limitations, respondents did appear to be open to positive toward the potential of information exchange and Health IT.
5. With these limitations, the critical success factors identified in the survey were the utility of the information, ease of use, and integration into workflow.

The survey instrument is currently in revision in an attempt to correct for these problems. However, surveys have limitations when the technologies under study are not fully understood by the subjects, resulting in challenges relative reliable and valid construction and use.

Clinical Outcome Results

Under the MTG, KHIE was required to address specific clinical outcome questions about the impact of connection to a health information exchange. This methodology required the data-mining of Medicaid claims in order to address the research questions concerning clinical and economic outcomes. The methodological approach was designed to provide a foundation to support research continuing beyond the MTG such as this health information exchange assessment. In the analysis there were numerous constraints including:

- The number of locations connected to KHIE
- The length of time connected to KHIE
- Differences in how providers were implementing, allowing access, and using KHIE
- Limitation of claims data

As summarized in Appendix D, analyses were undertaken concerning 13 clinical outcome research questions. The sample size was very limited and provided no inferential power. However, the efforts did provide a "proof of concept" for the analytical approach which is described below.

Based upon the experience of the MTG Assessment, GEOHI made a determination not to undertake an assessment of clinical outcomes during the first year of the Cooperative Agreement Grant. While the analytical approach exists, the limited amount of locations connected to KHIE and the limited amount of data exchanged would not provide meaningful research outcomes and the expenditure of resources and funds were not justifiable for this initial period. However, these expenditures may be justified as KHIE and health information exchange in general continued to grow and a longer time frame and richer data become available.

3.5 - EVALUATION QUESTIONS

1. *How many laboratories are participating in delivering electronic structured lab results?*

In undertaking a census of independent and hospital labs licensed and operating in Kentucky, the participation rate was 62% and 80% respectively, and an aggregate response rate of 79%. Appendix B provides a summary of responses to the questionnaire. While roughly half of the responding labs were not sending structured lab results using LOINC or interacting with EHRs, there is a substantial foundation from which to build the exchange of structured results.

2. *How many pharmacies are participating in e-prescribing?*

As indicated in Appendix B, 92% of pharmacies in Kentucky participate in e-Prescribing as measured by traffic on the SureScripts Network. In aggregate, 47% of physicians e-Prescribe through SureScripts, and approximately 33% of physicians use an EHR for network access.

3. *How many providers exchange summary of patient care records?*

As indicated by the network traffic analysis the amount of data transmitted on KHIE has grown exponentially as a function of the increase in executed participation agreements. Much of the data represent Medicaid claims data which are provided by the state and are pre-fetched by providers

using edge servers. A good deal of clinical data are also available through the edge-server framework, which consist of laboratory results, radiology reports, and other transcribed documents submitted by HL7. As of June, 2012, the KHIE network was unable to accept and transmit CCD's from participants due to implementation technical issues faced by a contracted vendor. This problem is being aggressively addressed with the vendor in that the KHIE infrastructure is being brought "in-house," under direct control of the CIO of the Cabinet and the CHFS technical team. CCD functionality is scheduled to be available by August, 2012.

HealthBridge provides services in Northern Kentucky. HealthBridge provides connection to six hospitals and multiple commercial labs. Approximately 1,200 physicians connected in 1,200 practices. In terms of messaging, more than 4.8 million electronic results have been delivered (ADT, LAB, RAD, and TRAN).

4. What is the volume of data being exchanged?

Data volume is depicted in Figures 3.4 and 3.5. This volume has grown exponentially, paralleling Provider Participation. However, Provider use of KHIE is limited and consists mainly of pulled data, likely pre-fetched. Although there is a good deal of pushed data through HL7 to the edge server framework, CCDs cannot be accepted at this point in time (scheduled for August, 2012).

5. What are the frequency and characteristics of use?

At this point, there is limited use of KHIE by Providers. This is due to (a) the limited amount and types of data available (b) most providers have limited roll-out to specific departments and allow limited access by personnel. Use is also limited by (c) the lack of integration with the EHR, (d)the absence of search functions on the provided CCD, and (e) the limited number of patients (primarily Medicaid) with active records. The locations using the VHR cite the dual sign-on as an additional barrier to use. Response time to queries does not appear to be an issue.

Clinicians have indicated a desire for lab results and summary reports. They find limited utility in the claims data except for medication reconciliation and assistance in creating a medical history for unfamiliar patients. A very positive finding is that in locations which allow broader access to KHIE within their organization, personnel involved with transitions-in-care and pharmacists have found great value in using KHIE.

6. Why do clinicians choose not to use KHIE?

No data from non-users, but users suggest the following issues:

- "Getting into" the system
- A view that the CCD has "nothing on it"
- Need to page too far into the CCD. Relevant data needs to be apparent.
- Too much claims information over too long a period
- Need clinical data**.**

7. What is the overall satisfaction level for users?

Users who were interviewed in the survey and the focus group are self-selected. They are positively inclined toward health IT, but responses indicate they are taking a "wait-and-see" approach relative to the value and use of health information exchange.

8. *What services can KHIE provide (e.g., help desk, training) to facilitate the use of health information exchange?*

Clinicians have been positive about training provided by KHIE, indicating that it is sufficient. The respondents to this point have recommended peer-to-peer training by Champions.

9. *How are policy levers being used to support and encourage health information exchange?*

Public policy levers have been actively used to encourage health information exchange. They include the integration of KHIE with DMS and the DPH. Medicaid patients in Kentucky are served by four MCOs that are required to connect to KHIE. Connection to various registries disease registries and the new birth registry are also core network functions. KHIE connects to any other entity on a non-discriminatory basis, making these services available to any health information exchange statewide.

10. *What patient engagement initiatives are being supported?*

A patient portal and PHR are part of the specified KHIE development plan and GOEHI is committed to supporting the Blue Button Program. The *Accountability and Transparency Committee* is part of the Coordinating Council and acts in an advisory and advocacy role. Within Kentucky 31% of ambulatory care physicians and 45% of hospitals are capable of providing an electronic copy (including physical media) of their health information to a patient.

11. *How do the governance and organizational structures of KHIE compare to traditional health information exchanges and structures established under other state cooperative agreements and what are the implications for health exchange sustainability?*

KHIE is organized under a quasi-public utility model. This provides the lowest cost since capital and operating expenses can be amortized over the largest user-base. This enhances and lowers the bar on value propositions. A quasi-public utility model also provides for universal service and recognizes the public good characteristics in health information exchanges. A subscription fee approach based upon fair-share contributions from stakeholders has been recommended as the initial funding mechanism subject to CHFS consideration and Legislative approval. Other governance approaches were considered, but they had substantial drawbacks and no identifiable benefits. Given the rapid roll-out of KHIE, there appears to be few issues at this time. Sustainability will depend upon delivering value and developing ancillary revenue streams through value-added or third party services.

12. *How is the evolution of enterprise HIEs, regional HIOs, Accountable Care Organizations, and vendor HIEs impacting the sustainability of KHIE and how will these initiatives be used to compliment health information exchange?*

KHIE is vendor neutral and provides connectivity on an agnostic basis. The mandate for KHIE is to "do no harm." KHIE provides connection to and between these entities and enhances their value. A connection and information rich environment provides an infrastructure that encourages e-Health

economic development. These entities also provide the opportunity for value-added and third party services.

13. *How is KHIE positioned relative to value-added services which can be bundled or offered as add-ons to enhance the value proposition, increase revenues and support meaningful use and other ONC requirements?*

The Commonwealth is a leader in e-Health initiatives and innovation. The governing organizations of KHIE have considered the evolving nature of healthcare delivery and the associated opportunities during planning and development phases. Value-added services are under constant consideration. Kentucky is also a leader in Medicaid transformation. Experience and best practices from these initiatives may be translated into value-added opportunities for KHIE.

14. *What are the reliability and validity assumptions that underlie the business model and sustainability plan for KHIE?*

The assumptions are:

- CHFS and the Kentucky Legislature choose to approve and support a subscription model
- The take-rate for KHIE is sufficient to meet revenue projects
- Stakeholders are willing to pay the subscription fee
- Stakeholders will provide data to the network
- The value propositions associated with KHIE exceed the marginal cost for users

15. *What impact does health information exchange have on clinical outcomes?*

Seventeen clinical outcome questions were developed per three disease states and tested with a limited sample under the MTG. This work is used as a "proof of concept." Due to the limited amount data and locations available for analysis during the past year, resources were not expended for this analysis because the results would be too limited and not statistically meaningful.

<u>Summary Findings</u>

- KHIE is one of the largest and leading HIEs in the nation as evidenced by the 180 signed Participation Agreements (representing 326 provider locations) and 54 live connections. Kentucky Providers have received $80.4 million in Meaningful Use Incentive Payments.
- The largest providers are leading the implementation, with 75% all hospitals with more than 300 beds connected or in-process.
- The development of targeted marketing and support based upon market segmentation (size) may be useful in maximizing KHIE implementation and use.
- Adoption and use within connected providers is the next hurdle, including pushing data.
- Users are positive about KHIE, but are taking a "wait-and-see" approach in determining the value of information exchange.
- Early adopters have identified clear potential barriers to success for KHIE, chief among them are the limitations of the CCD and absence of clinical data.
- Users are very positive about KHIE staff and support. They have not identified any issues in training and see no need for a help desk.
- Peer-to-Peer training and the use of Champions is the preferred means of education.
- Progress in KHIE economic sustainability planning has paralleled the growth of the network.
- Through the use of a quasi-public utility approach, KHIE is able to achieve lowest costs.

- Kentucky General Fund appropriations and a subscription-based model with proportional support by all stakeholders are under consideration by CHFS and enabling regulations have been drafted.
- By providing vendor neutrality and agnostic connection, KHIE is allowing for the efficient evolution of the HIE market, including, ACOs, RHIOs, Provider Networks, and Vendor Networks.
- KHIE is positioned to provide value-added and third party services as healthcare migrates to accountable care and outcome-based delivery.

III. PRIVACY AND SECURITY FRAMEWORK

4.1 – KHIE RESPONSE TO ONC PRIVACY AND SECURITY FRAMEWORK PIN

HIE Architectural Model: Data Aggregation (HIE entities that store, assemble or aggregate individually identifiable health information, whether centrally or in a federated model)			
Domain	**Description of approach and where domain is addressed in policies and practices.**	**Description of how stakeholders and the public are made aware of the approach, policies and practices.**	**Description of gap area and process timeline for addressing** *(if needed, use additional documents to describe and insert reference here)*
Required to address			
Individual Access and Correction	GOEHI assembles data and presents it in a CCD or the KHIE Community Portal VHR for viewing by healthcare providers. This domain recommends the HIE should give patients access to this record and develop a process for the patient to request any corrections to the record. Currently, according to the GOEHI Participation Agreement, GOEHI is a business associate of the covered entities that provide data to KHIE. As the business associate of the covered entities, GOEHI can only provide the services it has contracted to provide. The covered entities have provided their data to GOEHI for a limited range of services. The Participation Agreements signed by the covered entities and GOEHI provide "GOEHI will not disclose Data or Data Exchange Information to any non-Participant third parties except as: "(i) provided by the	GOEHI stakeholders participate in the KHIECC and committees. The policy concerning access to KHIE data was approved by the *Privacy and Security Committee* and recommended for adoption to the GOEHI Executive Director by the KHIECC. GOEHI policies are referenced in the GOEHI Participation Agreement signed by each GOEHI participating	As the need for consumer access is realized by the KHIE participating providers, KHIE will be able to address the demand for a patient portal. The GOEHI vendor contract requires the development of a patient portal. To date, GOEHI staff is able to add authorizations to the GOEHI participation agreement that direct the KHIE, as a business

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Required to address			
	Agreement; (ii) directed in writing by the originating Participant: or (iii) required by order of any court with appropriate jurisdiction over GOEHI." Additionally, according to Kentucky regulations such as 902 KAR 20:016 the covered entities own the medical records that are exchanged by KHIE. According to the current agreement with the data providers and GOEHI, KHIE cannot provide access by patients to the information contained within the exchange. The GOEHI policy applicable to this domain is policy 8. (All GOEHI policies are attached and labeled P & S Exhibit 1)	provider. The policies are posted for public viewing on the KHIE website http://khie.ky.gov.	associate of the participating providers (healthcare providers), to deliver additional services on behalf of covered entities. Examples of these services are laboratory connectivity and Immunization Registry connectivity. GOEHI will use the same business processes and contracting to provide a patient portal when the demand arises.

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Required to address			
Openness and Transparency	KHIE does not store or aggregate medical records for analytics or reporting purposes. KHIE does orchestrate the available medical records into the form needed to be presented by a CCD or presented by the KHIE Community Record, the VHR. The KHIE must be queried on the basis of individual patient information only. The GOEHI policy addressing a Notice of Privacy Practices is Policy 2. This domain recommends that where "HIE entities assemble IIHI individuals should have the ability to request and receive documentation to determine who has accessed their information or to whom it has been disclosed." As the business associate of the covered entities that provide data to the KHIE for exchange, KHIE can assist these KHIE participants with requests by individuals. GOEHI has developed a policy for providing data-audit logs that will allow the healthcare provider to supply information concerning who has viewed the patient's information when it was displayed in the CCD or the KHIE Community Portal, the VHR. The policy that is applicable to this process is policy 9.	GOEHI stakeholders participate in the KHIECC and committees. The policy concerning a notice of privacy practices for KHIE Participants was approved by the KHIECC *Privacy and Security Committee* and recommended to the GOEHI Executive Director by the KHIECC. GOEHI policies are referenced in the GOEHI Participation Agreement signed by each GOEHI participating provider. The policies are posted on the KHIE website http://khie.ky.gov. In addition to the	GOEHI recognizes no gaps in this domain.

HIE Architectural Model: Data Aggregation (HIE entities that store, assemble or aggregate individually identifiable health information, whether centrally or in a federated model)			
Domain	**Description of approach and where domain is addressed in policies and practices.**	**Description of how stakeholders and the public are made aware of the approach, policies and practices.**	**Description of gap area and process timeline for addressing** *(if needed, use additional documents to describe and insert reference here)*
Required to address			
		recommended Notice of Privacy Practice for a KHIE participant addressed in the KHIE policies. KHIE also posts on the KHIE website a notice of Privacy Practices that describes the information that is found in the HIE and the uses that a provider will make of the information. A copy of this notice is attached to this PIN response and labeled P & S Exhibit 2.	

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Domain	**Description of approach and where domain is addressed in policies and practices.**	**Description of how stakeholders and the public are made aware of the approach, policies and practices.**	**Description of gap area and process timeline for addressing** *(if needed, use additional documents to describe and insert reference here)*
Required to address			
Individual Choice	The GOEHI consent model for KHIE is no further consent required. As explained by, and according to the guidance provided by the Centers for Medicare and Medicaid Services (CMS), providers are advised that HIPAA does not require patients to sign consent forms before doctors and hospitals can share personal health information about patients for treatment purposes. Additionally, no prior consent is required for the permissive disclosure and sharing of personal health information for a number of defined purposes. These include circumstances when personal health information is used for treatment, payment and health care operations. The *Privacy and Security Committee* of the KHIECC again considered the issue of patient authorization in a series of meetings beginning in January of 2011 and continued to do so for six months. The findings of the committee are reflected in a report titled "Work of Patient Authorization/Consent Subgroup" and attached as P & S Exhibit 3. The workgroup recommended KHIE continue as a no further consent required HIE.	GOEHI stakeholders participate in the KHIECC and committees. The policies concerning individual choice were approved by the KHIE Privacy and Security Committee and recommended for adoption to the GOEHI Executive Director by the KHIE Coordinating Council. The policies are referenced in the GOEHI Participation Agreement signed by each GOEHI participating provider. The policies are posted on the KHIE website http://khie.ky.gov.	With the technology currently available to KHIE, there are no identified gaps in this domain. When technology is available that allows more granular choice GOEHI will again reconsider the patient authorization choices available to GOEHI.

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Required to address			
	This consent model is reflected by the GOEHI participation agreement. Patient consent and a notice of privacy practices are addressed by GOEHI Policy 2 - Notice of Privacy Practices and GOEHI Policy 3 - Permitted Use of Data.		
Collection, Use and Disclosure Limitation	The GOEHI Participation Agreement provides the purposes of the KHIE and the uses of the data collected by the KHIE. Providers currently use the exchange for treatment of patients only, but data is provided for all purposes pursuant to 45 CFR 164.514. GOEHI policies applicable to this domain are policies 1, 3, 4, 5, 6, 7, 7.1, 8, 16, 16.1	An attestation that the healthcare provider has a treatment relationship with the patient is required when a provider accesses the exchange. The stakeholders are trained in the use of the portals available to access the data available through KHIE. As part of this	GOEHI recognizes no gaps in this domain.

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Required to address			
		process the attestation process is described and the attestation language is reviewed. The language of the attestation is attached as P & S Exhibit #4.	

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Required to address			
Data Quality and Integrity	KHIE uses an automated process to match patient medical records by use of patient demographic information. Attached in P & S Exhibit # 5 is a diagram of this process. Also included is the algorithm used to assign weight to the factors considered in the automated process. This process is still under development and has not been determined a success by the exchange. The automated process still relies to a large degree upon the data administrator process. Once the automated process occurs, records that are not matched are placed in the data administrator queue for manual intervention. These records are manually matched by the Master Patient Index (MPI) Project Manager and the KHIE Data Administrator according to GOEHI administrative processes. Due to the human intervention provided by the MPI Project Manager and the MPI Data Administrator, the actual percentage of patient matching is 99.99%. The manual merge process used by the KHIE MPI Project Manager and KHIE Data Administrator is described in the P & S Exhibit 6.	GOEHI stakeholders participate in the KHIECC and committees. Policies concerning date quality and integrity will be approved by the KHIECC *Privacy and Security Committee* and recommended to the GOEHI Executive Director by the Coordinating Council. Policies for GOEHI are referenced in the GOEHI Participation Agreement signed by each GOEHI participating provider. The policies are posted on the KHIE website at http://khie.ky.gov.	During the operation of KHIE and the maintenance of the MPI, GOEHI has encountered two operational instances that require a policy to address: (1) GOEHI needs a policy to address errors in patient data that is received from the provider and the process to remove the data from the KHIE data base. GOEHI needs a policy to address errors in patient data within the KHIE and the process to make a correction in the KHIE data base.

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			GOEHI has started the internal process to develop these policies and the processes. GOEHI is establishing a new *Clinical Advisory Committee* as part of the KHIECC. This committee will be composed of clinicians. This group will advise on these policies. The work on these policies should be completed by December 2012.

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Required to address			
Accountability	All participants in KHIE must be covered entities and subject to their individual legal duty as a regulated covered entity and it's contractually assumed duties as a GOEHI participant according to the GOEHI participation agreement. These obligations include complying with all applicable federal, state and local laws and regulations protecting the privacy and security of protected health information. GOEHI has established policies that set forth these duties in addition to those found in the GOEHI Participation Agreement. The applicable policies are 1, 2, 6, 7, 7.1, 8, 9.1, 15, 16 and 16.1.	GOEHI stakeholders participate in the KHIECC and committees. The policies concerning the operation of KHIE were approved by the KHIE *Privacy and Security Committee* and recommended for adoption to the GOEHI Executive Director by the KHIECC. The policies are referenced in the GOEHI Participation Agreement signed by each GOEHI participating provider. The policies are posted on the KHIE public website http://khie.ky.gov.	GOEHI recognizes no gaps in this domain.

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Required to address			
Safeguards	GOEHI is a Kentucky state agency within the CHFS. As a state agency GOEHI is subject to the policies of the Commonwealth Office of Technology (COT). Those policies are listed at http://technology.ky.gov/governance/Pages/policies.aspx. The policies most relevant to the operation of KHIE are attached and labeled as P & S Exhibit 7. Secondly, GOEHI is also within the CHFS and all agencies of the Cabinet receive information technology services from the Office of Administrative and Technology Services (OATS) an office within the Cabinet. OATS policies can be found at found at http://chfs.ky.gov/os/oats/policies.htm The policies most relevant to the operations of KHIE are attached and labeled as P & S Exhibit 8. Both of these groups of policies are in addition to the policies adopted for use by GOEHI and those policies that apply to GOEHI participants. The complete GOEHI policies are attached as Exhibit 1. To verify user identity, authenticate users and authorize individuals KHIE has adopted policies 7, 7.1 and 9.1. These	GOEHI stakeholders participate in the KHIECC and committees. The policies concerning the operation of KHIE were approved by the KHIECC *Privacy and Security Committee* and recommended to the GOEHI Executive Director by the KHIECC. The policies are referenced in the GOEHI Participation Agreement signed by each GOEHI participating provider. The policies are posted on the KHIE public website http://khie.ky.gov.	GOEHI will continue to monitor the security status of KHIE and develop policies and processes to address the security needs of KHIE as they develop.

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Domain	**Description of approach and where domain is addressed in policies and practices.**	**Description of how stakeholders and the public are made aware of the approach, policies and practices.**	**Description of gap area and process timeline for addressing** *(if needed, use additional documents to describe and insert reference here)*
Required to address			
	policies are further described by the KHIE process named "Add or Disable a User Name and Reset Passwords, Key Process" and attached as P & S Exhibit 9. In addition to the participant access to the KHIE data, GOEHI has also evaluated KHIE environments for employee and contractor access. Policy 16.1 is designed to protect KHIE data by restricting the access of all individuals to KHIE data based upon job function. This policy is further explained by the process named "GOEHI Employee and KHIE Contractor Access to the Kentucky Health Information Exchange Environments" and attached as P & S Exhibit 10. KHIE utilizes security throughout the infrastructure and the application by providing multi-layers of security. The multiple layers of external and internal security provide administrative, physical, and technical means to protect sensitive or confidential data. The multi-layered security approach includes Network, Physical, and Application security. The network is secured through the use of multiple redundant firewalls throughout the		

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Required to address			
	infrastructure, Network Intrusion Detection Software, anti-virus software, and data encryption for files transferred to and from external users. The server is protected from unauthorized access through the use of physical barriers, such as secure physical location and a secure facility, technical barriers, such as the use of restricted access rights, and administrative barriers, including the administration of security privileges. The KHIE application is secured through technical access control and strong authentication. Access to the KHIE system VHR and MPI interface is allowed through the use of an individual user ID combined with a strong password. The user is assigned roles based on their need to know and restricted access to specific applications or functions. Audit functionality provides any change to KHIE information, down to the user ID level. In March 2011, CHFS, on behalf of the GOEHI, retained an outside security and privacy assessment team to assess the security posture of the KHIE. This assessment included a		

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Required to address			
	HIPAA Security GAP Analysis involving policy, procedure and standard review, and technical documentation review. It also included the development of a roadmap or plan toward overall HIPAA Privacy and Security. The second of three phases was completed in April 2012. Results have been delivered to the KHIE project manager and the GOEHI Acting Executive Director. These results are being used to direct and guide the efforts of GOEHI in the development of security measures and privacy policies as needed. The third phase is targeted to begin later in 2012 and will involve additional security assessment processes and privacy assessment processes. The statement of work for the 3rd phase has not yet been developed. The KHIE application uses encrypted connections to ensure the confidentiality and integrity of the data. Both the VHR and connections to the edge servers use https (SSL encryption as defined in the https protocol). This ensures that the data is passing through a secure connection.		

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	The data is encapsulated with either VPN, TLS (Transport Layer Security), or HTTPS (SSL). For example: when the browser requests the VHR application the encryption used is TLS. When a partner requests data the information is encrypted with SSL. The EDGE/MLLP uses VPN to transfer data internally with EMR. Please note that according to ACS security design documentation, data is secured in transport by SSL or TLS. Additionally, when a user sends the name, address and birth date to the Record Locator Service while looking for patient information, data is encrypted via HTTPS (SSL) when the data is at rest and confidential data is secured on the server.		

Note: Privacy and Security PIN Exhibits 1-10 are referenced in Appendix E. However, these documents are contained in three separate PDF files submitted in conjunction with this update due to large file sizes.

IV. PROJECT MANAGEMENT PLAN

5.1 – UPDATED KHIE PROJECT MANAGEMENT PLAN: GOAL 1.0

Goal 1.0 **Provide State Level Leadership at the Executive Level for Electronic Health Information Exchange**		
ONC Governance Domain Requirement (2009 FOA)	Appointment of a State Government HIT Coordinator who will coordinate state government participation in HIE; administer the State HIE Cooperative Agreement; and convene and chair a statewide HIE advisory group for the Kentucky Health Information Exchange (KHIE)	
	ACTION REQUIRED	**EXECUTION**
Action Step 1.1 ONC Governance Requirement G.1 ONC Business Requirement B.4	Develop the Governor's Office of Electronic Health Information (GOEHI), which was created by Executive Order in August 2009, to act in the capacity of the State Designated Entity (SDE), provide statewide leadership, coordinate HIE efforts across the Commonwealth; coordinate health information exchange across state government programs, state and federal healthcare programs; and, other public sector and private sector healthcare providers and organizations	**2012 – 2013:** Existing staff as of June 2012: Vacant Executive Director (1 FTE), , Vacant Executive Secretary (1 FTE), Acting Executive Director (1.0 FTE); Staff Assistant (1.0 FTE); Legal Counsel (1.0 FTE); Healthcare Data Administrator (2.0 FTE); Internal Policy Analyst (1.0 FTE) Resource Management Analyst (1.0 FTE) KHIE Contract Staff- Project Manager (2), Technical Analyst (1), KHIE Outreach Coordinators (5), MPI Project Manager (1), Health Technical Architect (1), Technical Analyst (2), Business Analyst (1), Onboarding Specialist (2) **New Secretary of the Cabinet started in April. Vacant positions will be filled. Other staff will remain constant.**

Goal 1.0 **Provide State Level Leadership at the Executive Level for Electronic Health Information Exchange**		
Action Step 1.2 ONC Business Requirement B.5 PIN July 6, 2010 PIN Update June 1, 2012	Develop a comprehensive communications plan that identifies audiences and the strategies that will be employed to deliver education and information on an on-going basis through a concerted approach using multiple methods to sustain interest, communicate value, and provide avenues for obtaining additional information and/or support when appropriate [AT 2.0]	The development of the communications plan and implementation was carefully coordinated with the State Medicaid Health IT Plan (SMHP) communications plan which was completed on October 25, 2010. Medicaid SMHP writers sit on the *Communications Committee*. The KHIE/EHR Communication Committee meets on a monthly/quarterly basis as needed to review and update deliverables in the plan. The plan will continue to be updated and implemented throughout the year. Specific initiatives: Engage consumer advocacy groups by June 2012 to assist in planning (Foundation for a Health KY; KY Voices for Health). Collaborate and include the RECs (Tri-States and KY) via the KY Collaborative MU Workgroup by June 2012. DRAFT Consumer Engagement program presented to A&T Committee by July 2012. Launch "Consumer Engagement" initiative at e-Health Summit in September, 2012.
Action Step 1.3	Target communications efforts to: healthcare providers, hospitals, clinics, physicians, etc.; payers (health plans and other purchasers); healthcare information exchanges; and governmental entities and agencies [AT 1.0] [High Priority}	
Action Step 1.4	Target communication to: patients and consumers; health professional schools, universities, and colleges; and health information technology vendors [AT 1.0] (Priority behind Step 1.4)	
Action Step 1.5	Maintain a comprehensive website (http://chfs.ky.gov/os/goehi/) to promote transparency, accountability, and serve as a reference point/clearinghouse for information about the KHIE and its governance, administration, and operations; meaningful use; resources and services, including the RECs and RHIOs	New website established for KHIE: http://khie.ky.gov in 2011. Maintained by GOEHI Staff. Hot Topics and News posted on a weekly basis.

Goal 1.0 **Provide State Level Leadership at the Executive Level for Electronic Health Information Exchange**		
Action Step 1.6	Issue e-mail bulletins at least monthly using Gov.Delivery updating stakeholders about the KHIE, the KHIE Coordinating Council, and other information related to HIE and Meaningful Use	Gov.Delivery is used on at least a weekly basis to share news to all our stakeholders. Currently we have over a thousand subscribers and it continues to grow.
ONC Governance Domain Requirement (2009 FOA)	Ensure the coordination, integration, and alignment of efforts with Medicaid and public health programs through efforts of the State Health IT Coordinators	
Action Step 1.7 PIN July 6, 2010 PIN Update June 1, 2012	State HIT Coordinator is a member of the Cabinet for Health and Family Services (CHFS) Secretary's Executive Staff as are the Commissioners of Medicaid Services and Public Health; this supports coordination of efforts across programs at the highest level	The new Cabinet Secretary holds an executive staff meeting on a weekly basis. The State HIT Coordinator is a member of Executive Staff as well as the Commissioners of the Department of Medicaid Services (DMS) and Department of Public Health (DPH). Updates are shared on a weekly basis.

Goal 1.0 **Provide State Level Leadership at the Executive Level for Electronic Health Information Exchange**		
Action Step 1.8	Participate with the State Medicaid Program in the Regional CMS/ State Medicaid Directors Meaningful Use Workgroup	The State HIT Coordinator/GOEHI organized a KY Meaningful Use Collaborative Workgroup which includes members of GOEHI/KHIE, State Medicaid Program, RECs, RHIOs, Healthcare Excel. The team has met biweekly. The Collaborative Workgroup submitted comments to CMS on Stage 2 Meaningful Use Proposed Rule. The Collaborative Workgroup will continue to meet on a regular basis to work together on review /analysis and interpretation of Meaningful Use objectives. The goal is to have 'one clear voice' for the providers across the state of Kentucky as we work through Stage 1 and towards Stage 2 Meaningful Use. The KY Collaborative Workgroup came to consensus and agreed KY would be a Meaningful Use Acceleration State. Agreed upon projections: • 1000 Medicare eligible providers • 1400 Medicaid eligible providers • 85 Hospitals/dual eligible
Action Step 1.9	Serve on the National Governor's Association HIT Advisory Committee	The GOEHI Executive Director has been appointed to this Committee.
ONC Business & Technical Operation Domain Requirement (2009 FOA)	Provide technical assistance as requested to HIOs and others developing HIE capacity within the state	

Goal 1.0 **Provide State Level Leadership at the Executive Level for Electronic Health Information Exchange**		
Action Step 1.10 ONC Business Requirement B.1	Engage in bi-weekly conference calls with the state's two RECs and HealthBridge, which is the state's fully operating RHIO, to coordinate technical assistance (Provision of technical assistance for HIE is also addressed under Goal 3.0)	The State HIT Coordinator/GOEHI holds a biweekly call with the RECs, HealthBridge, NE KY RHIO, State Medicaid and HealthCare Excel. Minutes from each call are maintained. These calls will continue to be ongoing.
ONC Finance Domain Requirement (2009 FOA)	Develop the capacity to effectively manage funding necessary to implement the state Strategic Plan; this capacity should include establishing financial policies and implementing procedures to monitor spending and provide appropriate financial controls	
Action Step 1.11	All funds are administered in accordance with the State Government and CHFS financial management, accounting, and procurement guidelines/codes and policies and procedures, which include detailed internal controls and are subject to routine state audit	An experienced Resource Management Analyst (1.0 FTE) has been hired who has extensive state government experience. This position is supported by accounting and procurement staff from the Office of Administrative and Technology Services (OATS). Ongoing financial reporting is the responsibility of the Internal Policy Analyst III. Ongoing.
ONC Governance Domain Requirement (2009 FOA)	Account for the flexibility needed to align with emerging nationwide HIE governance that will be specified in future program guidance and with other federal programs	
Action Step 1.12 ONC Outcomes and Performance Measures Requirement O.2	Update Strategic and Operational Plan annually	Update to SOP due to ONC in progress.

Goal 1.0 **Provide State Level Leadership at the Executive Level for Electronic Health Information Exchange**		
Action Step 1.13 ONC Governance Requirement G.5 Training & Technical Assistance Requirement N.1	Participate in NHIN Governance Training	As requested by ONC.
Action Step 1.14 Training & Technical Assistance Requirement N.2	Review updates to the Statewide HIE Toolkit modules	As new guidance is announced. KHIE Coordinating Council and Committees also will be advised of the updates and information posted on the KHIE Coordinating Council SharePoint site.

5.2 – UPDATED KHIE PROJECT MANAGEMENT PLAN: GOAL 2.0

Goal 2.0 **Implement a Multi-Stakeholder Process that includes Medicaid and Public Health Representation and is Transparent and Representative of Diverse Stakeholders (PIN July 6, 2010)**		
ONC Governance Domain Requirement (2009 FOA)	Establish mechanisms to provide oversight and accountability of HIE to protect the public interest	
	ACTION REQUIRED	**EXECUTION**
Action Step 2.1 ONC Governance Requirement G.4 ONC Planning Requirement P.1, P.2	Convene a statewide HIE Coordinating Council to serve as an advisory body for the KHIE KHIE Coordinating Council will meet no less than twice or more frequently as need is indicated Committee charters were updated within 30 days of approval by ONC of the Strategic and Operational Plan align with the scope of work found in the State HIE Strategic and Operational Plan and other issues as deemed by the KHIE Coordinating Council; thereafter, Committee members update their charters annually in conjunction with the annual update of the HIE Strategic and Operational Plan	**2012-2013:** • March 8, 2012 - Council and Committees met for update on KHIE • September 17, 2012-Scheduled meeting at the eHealth Summit • March, 2013 TBD • September, 2013 TBD • Communications regarding the KHIE implementation are provided to the KHIECC on weekly basis, depending on activities (sometimes more often). • Committee charters are reviewed and updated as needed annually in September.

Goal 2.0 **Implement a Multi-Stakeholder Process that includes Medicaid and Public Health Representation and is Transparent and Representative of Diverse Stakeholders (PIN July 6, 2010)**		
Action Step 2.2	Develop policies and procedures for the KHIE (Refer to Goal 4.0 Privacy & Security Framework for detailed description)	Policies have been developed, approved and posted to our website at http://khie.ky.gov. As additional policies are developed and approved, notice will be given out via Gov.Delivery and then posted to our public website. Please refer to Goal 4.0 for detailed timeline and description of review and approval process.

Goal 2.0 **Implement a Multi-Stakeholder Process that includes Medicaid and Public Health Representation and is Transparent and Representative of Diverse Stakeholders (PIN July 6, 2010)**		
Action Step 2.3	Public reporting and the maintenance of transparency will be accomplished through the GOEHI website All Council and Committee meetings will conform to state open meetings requirements and be published on the GOEHI website as well as included in routine CHFS communications re: scheduled open meetings GOEHI policies and procedures and other information related to the operation of the KHIE that is not proprietary or does not compromise security will be posted to the GOEHI website	http://khie.ky.gov is maintained by GOEHI staff.
ONC Governance Domain Requirement	Set goals, objectives and performance measures for the exchange of health information that reflect consensus among health care stakeholder groups and that accomplish statewide coverage of all providers for HIE requirements related to meaningful use criteria	

Goal 2.0 **Implement a Multi-Stakeholder Process that includes Medicaid and Public Health Representation and is Transparent and Representative of Diverse Stakeholders (PIN July 6, 2010)**		
Action Step 2.4 ONC Outcomes & Performance Measures Requirement 0.1 PIN July 6, 2010 PIN Update June 1, 2012	Develop performance benchmarks in conjunction with the development of the SMHP to cover all providers	The State HIT Coordinator has convened a KY Collaborative Meaningful Use Workgroup that includes representatives from Medicaid, the KY Governor's Office of Electronic Health Information, the Kentucky Health Information Exchange, KY REC, Tri-States REC, HealthBridge and KY QIO (Health Care Excel). This workgroup will meet no less than monthly (more often than that currently) to review, analyze and work towards consensus on meaningful use for the providers of the Commonwealth of Kentucky. The workgroup decided together to take the 'MU Acceleration Challenge' and subsequently set projections/benchmarks for 2012. Projections were: • 1,000 Medicare eligible providers; • 1,400 Medicaid eligible providers; • 85 hospitals. GOEHI/KHIE works closely with Medicaid on a daily basis to accomplish the goals and objectives, and benchmarks set forth in the SMHP. A bi-weekly meeting is held that includes the Medicaid HIT Coordinator, the KY State HIT Coordinator, the KHIE Project Manager, the CIO of the Cabinet for Health & Family Services (CHFS) and others.

Goal 2.0 **Implement a Multi-Stakeholder Process that includes Medicaid and Public Health Representation and is Transparent and Representative of Diverse Stakeholders (PIN July 6, 2010)**		
ONC Business & Technical Operation Domain Requirement 2009 FOA & B.3	Monitor and plan for remediation of the actual performance of HIE throughout the state (and implement business processes to support clinical quality improvement)	
Action Step 2.5	Develop an integrated plan and timeline to guide implementation and reporting of surveys to capture perceived value, implementation feedback, adoption, Meaningful Use, and other performance measures for the State HIE Cooperative Agreement and the Medicaid State Health IT Plan (SMHP) [AT 5.0]	Please reference 'Program Evaluation' under Section III.
Action Step 2.6	Administer surveys to obtain stakeholder input through a feedback loop that reinforces and builds on previous findings to obtain critical feedback during the implementation phase of the KHIE to evaluate: communications; perceived value and disadvantages of the KHIE; business processes positively impacted by the KHIE and other needs being met; and, needs which could be met by the KHIE [AT 3.1, 3.2]	
Action Step 2.7	Survey a random sample of users six months after implementation to determine how well the KHIE meets the stakeholders' needs [AT 4.0]	
Action Step 2.8	Convene a clinical advisory workgroup to evaluate improvements of clinical outcomes for patients, including the impact of provider use of the KHIE on selected diagnoses by measuring clinical outcomes [AT 4.4] [PA 5.0]	Recruitment of members is almost complete. Workgroup will be convened by GOEHI no later than July 15, 2012 to inform the updating of the annual plan and to serve in an advisory capacity during evaluation of the KHIE.

Goal 2.0 **Implement a Multi-Stakeholder Process that includes Medicaid and Public Health Representation and is Transparent and Representative of Diverse Stakeholders (PIN July 6, 2010)**		
Action Step 2.9 ONC Outcomes & Performance Measures Requirement O.1	Conduct an evaluation of the KHIE, which includes annual reports as well as an end-of-project report	Please reference 'Program Evaluation' under Section III.

Goal 2.0 **Implement a Multi-Stakeholder Process that includes Medicaid and Public Health Representation and is Transparent and Representative of Diverse Stakeholders (PIN July 6, 2010)**		
ONC Business & Technical Operation Domain Requirement	Document how the HIE efforts within the state are enabling meaningful use	
Action Step 2.10	Develop and measure performance benchmarks annually during the update of the State HIE Strategic and Operational Plan with a written report of the progress toward meaningful use posted to the GOEHI website	Please reference Action Step 2.4. Annual report in progress.

Goal 2.0 **Implement a Multi-Stakeholder Process that includes Medicaid and Public Health Representation and is Transparent and Representative of Diverse Stakeholders (PIN July 6, 2010)**		
Action Step 2.11 ONC Finance Requirement F.1	Conduct an evaluation of the KHIE by an external vendor to include (but not limited to): • Medicaid claims data analysis to assess implementation/use; clinical & economic outcomes • Data access tracking logs to assess implementation/use; clinical outcomes • Continuity of care document analysis to assess implementation/use; clinical & economic outcomes • Workflow/process analysis to assess implementation/use; economic outcomes • Clinician survey to assess implementation/use; clinical & economic outcomes • Focus groups to assess implementation/use; clinical & economic outcomes The written evaluation report will be posted to the GOEHI website Findings also will be used by the *BD&F Committee* to assess how the State may use state purchasing power to enhance the demand for care coordination and HIE in building sustainability (Refer to Action Step 2.15)	Please reference 'Program Evaluation' under Section III.
Action Step 2.12 Outcomes & Performance Measures Requirement O.3	Participate in ONC evaluation of the State's implementation and outcomes for the State HIE Cooperative Agreement	As requested.

Goal 2.0 **Implement a Multi-Stakeholder Process that includes Medicaid and Public Health Representation and is Transparent and Representative of Diverse Stakeholders (PIN July 6, 2010)**		
ONC Finance Domain Requirement	Develop a path to sustainability including a business plan with feasible public/private financing mechanisms for ongoing information exchange among health care providers and with those offering services for patient engagement and information access	
Action Step 2.13 ONC Finance Requirement F.2	Develop an annual business plan that addresses the potential for risk and projects revenues and expenses based on projected levels of HIE and related services utilization, and revenue sources [BF 4.0]	Please reference 'Sustainability Plan' under Section II.
Action Step 2.14	Conduct key informant interview, surveys, and other market research to identify the product market for HIE services, including the types of services that might be provided as value added services [BF 1.0] [BF 5.0]	
Action Step 2.15	Develop a pro forma budget* and revenue projections for the KHIE for the 3rd project year and subsequent years thereafter to plan for sustainability beyond the availability of federal grant funds based on a number of potential revenue sources and mixes to assess feasibility and evaluate options [BF 3.0]	
Action Step 2.16	Implement a revenue model that is supported across stakeholder groups with payments proportional to the value they receive from the HIE [BF 2.0] [BF 5.0]	
Action Step 2.17	Develop a communications plan to secure stakeholder support and buy-in for the business plan, including user fees and/or other assessments	
Action Step 2.18	Develop the administrative policies and procedures, including required regulatory actions, to implement and manage the business model	

Goal 2.0 **Implement a Multi-Stakeholder Process that includes Medicaid and Public Health Representation and is Transparent and Representative of Diverse Stakeholders (PIN July 6, 2010)**		
Action Step 2.19	Research grants and other funding opportunities to expand the KHIE (including the addition of value added services) and/or support ongoing operations	An experienced technical writer has been assigned to assist KHIE in researching grant and other funding opportunities. This position is housed in the Medicaid Division and serves as an excellent "bridge" to align the two programs.

5.3 – UPDATED KHIE PROJECT MANAGEMENT PLAN: GOAL 3.0

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
ONC Technical Infrastructure Domain Requirement	Develop or facilitate the creation of a statewide technical infrastructure that supports statewide HIE to include: eligibility & claims transactions; electronic prescribing & refill requests; electronic clinical laboratory ordering & results delivery; electronic public health reporting (i.e., immunizations, notifiable laboratory results); quality reporting; prescription fill status and/or medication fill history; clinical summary exchange for care coordination and patient engagement	
	ACTION REQUIRED	**EXECUTION**
PIN July 6, 2010	Conduct Gap Analysis	
Action Step 3.1	Conduct statewide gap analysis of existing data sources, surveys, etc. to develop an overview of the current HIE activities within the state including the penetration of electronic lab delivery, e-prescribing networks and other existing HIE solutions	Please reference 'Program Evaluation' under Section III.
Action Step 3.2	Document baseline findings for: • % pharmacies accepting electronic prescribing & refill requests • % clinical laboratories sending results electronically • % health plans supporting electronic eligibility and claims transactions • % health departments receiving immunizations, syndromic surveillance, and notifiable laboratory results	This information is provided in the appendices submitted with this update.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step 3.3	Share findings with the KHIE Coordinating Council & Committees and use in developing the statewide plan for the development of the technical infrastructure and to plan for the roll-out of the KHIE	Communications are provided with the KHIE CC on a regular basis. The KHIECC and committees meet face to face twice annually.
Action Step 3.4	Participate in the design and implementation (and analyses of findings) of the statewide environmental scan to be conducted in conjunction with development of the Medicaid State Health Information Technology Plan (SMHP)	SMHP vendor selected through open procurement August 2010; GOEHI will collaborate with DMS and OATS in the completion of the following activities: • August 20, 2010 - Development of methodology & survey instruments; • August 25, 2010 - Determination of sample size and selection of representative sample; • August 31, 2010 - Distribution of survey instruments and; • September 29, 2010 - Survey closed; • October 15, 2010 - Analysis completed.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step 3.5 ONC Business & Technical Requirement B.2	GOEHI, the KHIE Coordinating Council & Committees will use findings from the SMHP environmental scan to coordinate efforts with Medicaid and to update the State HIE Plan	Completed.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
ONC Business and Technical Operations Domain Requirement	Coordinate and align efforts to meet Medicaid and public health requirements for HIE and evolving meaningful use criteria including enabling electronic meaningful use and clinical quality reporting to Medicaid and Medicare; and, build capacity of public health systems to accept electronic reporting of immunizations, notifiable diseases and syndromic surveillance from providers	
PIN July 6, 2010	Set Strategy to Meet Gaps in HIE Capabilities for Meaningful Use	
Action Step 3.6 ONC Technical Infrastructure Requirement T.1, T.2, T.3, T.4 PIN July 6, 2010	Build technical infrastructure to support statewide health information exchange to fill the gap in HIE access and support meaningful use	State secured a Medicaid Transformation Grant (MTG) to support development of technical infrastructure to support statewide HIE that is open to all healthcare providers and organizations. Contract executed with Xerox (formerly ACS Healthcare) in September 2009, and renewed in September, 2011. Xerox has subcontracted with Optum Insight (Axolotl) to expand connectivity options. (Discussed in greater detail in the Plan's narrative & timeline/action steps described below).

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step 3.7	Establish connectivity between HealthBridge and the KHIE	While there is not yet a formal Nationwide Health Information Network (NwHIN) connection between HealthBridge and the KHIE, HealthBridge is the connecting bridge between a large Northern Kentucky hospital system and the KHIE. This initial implementation will guide the configuration and deployment of the NwHIN connection. There will also be HISP-to-HISP connectivity established in 2013 for exchange via Direct.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
PIN July 6, 2010	Focus and prioritize activities to make rapid progress to help state providers meet stage 1 meaningful use requirements	
Action Step 3.8	Expedite deployment of the KHIE Expand KHIE technical architecture to offer more options for providers and hospitals to include: • Virtual Private Network (VPN) connectivity • EMR-Lite • Provide fully operational provider portal to a virtual health record	Completed. As of June 11, 2012 5 facilities are connected and actively exchanging data with KHIE.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step 3.9	Pilot KHIE with up to 20 physician practices using the EMR-Lite product Pilot KHIE with up to 20 physician practices affiliated with Pilot hospitals using third party EMR TBD	After the original KHIE pilot (based on web services CCD exchange), an additional method of connectivity was sought as a lesson learned. Far fewer hospital system and EHR vendors were ready to exchange a standard c.32 CCD via web services than originally anticipated. An additional edge services/VPN service offering was developed and on-boarding with both methods of connectivity has proceeded apace. The EMR-Lite product offered by our vendor is currently being replaced by a more comprehensive system that will be more useful to our providers. Providers have not been interested in installing a modular EMR with no registration/scheduling and/or billing components. The new product, "Care Tracker" will offer these components in addition to being a certified EMR.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step 3.10	Outreach, Orientation, Rapid Deployment (OORD) for enrollment and connectivity to KHIE over 4-5 weeks for each group (8-10 hospitals per group) targeting approximately 2 hospitals per week and the providers in the hospital's service area; the process as described in State Plan narrative consists of the following steps: • Outreach, Engagement, KHIE Orientation (GOEHI staff, OATS, RECs) • KHIE Options described (GOEHI, OATS) • Services & Supports (including Provider Incentive Payments Program described and other services/supports through the REC & GOEHI (DMS, GOEHI, RECs,) • Provider Agreement signed (GOEHI staff) • Readiness Assessment completed (provider) Option A: Connectivity to the KHIE if provider has current capability to send and receive a CCD Option B: Deferred connectivity—identify actions required for system /interoperability connectivity to the KHIE & a timetable for connection (in the interim provider may elect to use Option C or D depending on their timetable for system's connectivity) Option C: Use of the KHIE provider portal to the virtual health record Option D: Use of the EMR "Lite" product	The original plan to enroll and on-board providers in cohorts changed when the additional method of KHIE connectivity became available. A small and highly adept team of on-boarding specialists works through the on-boarding process with our data providers coordinating across vendors and accommodating schedules. Most of the state's larger providers are currently connected and there is an extensive on-boarding pipeline. Provider practices are being on-boarded in groups by EHR vendor as connectivity is established with their vendors. Ongoing outreach and provider education will occur with priority given to regions/communities with low response/participation following first round of OORD – priorities to be determined and action plan to developed during January 2012 in conjunction with annual update of HIE Strategic and Operational Plan. **2012-2013:** Outreach and provider education for 2012 – 2013 has been designed to address the regions/communities with low response. The KHIE Outreach Coordinators continually evaluate their respective regions to determine where outreach needs to occur. They work very closely with the REC Implementation Specialists from the KY REC and Tri-States REC and take daily 'referrals' from them to make sure all providers are taken care of.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step 3.10.1	Develop policies and procedures, including eligibility criteria and other guidelines for administration/operation of the State HIE Provider Assistance Program (as described in action steps 3.10.2-4)	Action Step 3.10.1-3.10.4-KHIE used cooperative funds awarded to connect any interested provider/hospital for free. A Provider Assistance Program was not implemented as a result. We will continue to connect providers for free as long as grant money is available.
Action Step 3.10.2	Develop guidelines for provider/hospital participation in the KHIE Connectivity Assistance Program (CAP) which will cover the following costs: initial connectivity to the KHIE & maintenance; annual license & maintenance fees; software license; hosting services; and professional services	
Action Step 3.10.3	Financial assistance to support interoperability between existing EMR systems and the KHIE for hospitals, safety net providers, and clinics; eligibility criteria will be needs-based	
Action Step 3.10.4	Assistance to clinical laboratories and community pharmacies who otherwise would not have the capacity to support providers in achieving meaningful use; eligibility criteria will be needs-based with priority given to those serving medically underserved areas	

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step 3.11	Hospitals systems are connected to the KHIE • CAP agreement signed for those hospitals wanting KHIE to share the costs • Interface requirements determined (vendor) • Interfaces developed (vendor and provider) • Hardware & software installed (vendor and provider) • Interface testing (vendor and provider) • Validation & Go-live (vendor and provider) • Training (Vendor) • Help Desk (Vendor)	As documented in Action Step 3.10, the GOEHI is providing tailored on-boarding with end-to-end coordination for data providers. The on-boarding team provides coordination between the data provider and KHIE vendors from technical kick-off through production maintenance. Moving at the pace of the on-boarding data providers has altered the rollout schedule. As of this writing, 32 hospitals and 19 other providers are connected to the KHIE.
Action Step 3.11.1	Hospitals are connected to KHIE for bi-directional exchange	**2012-2013** Completed.
Action Step 3.11.2	Hospitals are connected to KHIE for bi-directional exchange	**2012-2013** Completed.
Action Step 3.11.3	Hospitals are connected to KHIE for bi-directional exchange	**2012-2013** 27 new hospitals are connected to the KHIE during the period from September 1, 2012- August 31, 2013.
Action Step 3.11.4	Hospitals are connected to KHIE for bi-directional exchange	**2013-2014** 15 new hospitals are connected to the KHIE during the period from September 1, 2013 – August 31, 2014.
Action Step 3.11.5	Hospitals are connected to KHIE for bi-directional exchange	**2014-2015** 44 new hospitals are connected to the KHIE during the period from September 1, 2014 – August 31, 2015.
PIN July 6, 2010	Capacity for E-Prescribing in 2012	
Action Step 3.12	The KHIE Exchange Framework supports e-prescribing	With the passage of the HITECH Act, the focus of provision of e-prescribing moved to the EHR level. The capability exists at the KHIE level but is not provisioned for use by any providers.
PIN July 6, 2010	Capacity to Receive Structured Lab Results in 2011	

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step 3.13	Connectivity and capacity for the State Public Health Lab to support bi-directional exchange is under development and near completion	Connectivity to the State Lab's microbiology system is complete and in production. The newborn screening results connectivity is in test and holding while the Lab's LIMS vendor makes changes required by the Lab Director.
Action Step 3.13	KRS 333.150 revised during 2010 Kentucky General Assembly to permit medical laboratory results to be transmitted to an electronic health information exchange or network specified for purposes with patient consent and in compliance with HIPAA	Complete.
Action Step 3.14	The KHIE Exchange Framework supports laboratory e-ordering and response	Core service of the KHIE available at go-live date for users.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
PIN July 6, 2010	Capacity to Share Patient Care Summaries Across Unaffiliated Organizations in 2011	
Action Step 3.15	The HIE Framework supports exchange of patient information via HL7 v2 through which clinical messages can be sent and received; it does not, at present, support a CCD The KHIE framework architecture supports the user in extracting, storing, and viewing a CCD in a viewer; however, many EHRs are not mature enough, at present, to handle CCD's The Exchange Hub will be configured to send patient data to an KHIE repository which will contain all available patient data regardless of entry point (maximum retention of 24 hours) and orchestrate production of a CCD which will be sent to the requesting user through the KHIE Framework Exchange Hub (See Stage 2 graphic)	The exchange infrastructure between the web services and edge services is complete and operational. Release of "push" (response to an exchange query with a CCD) functionality on the web services side will be released in production in 3rd quarter 2012.
PIN July 6, 2010	Capacity of Public Health Systems to Accept Electronic Reporting of Immunizations, Notifiable Diseases and Syndromic Surveillance Reporting from Providers over the course of the project	
Action Step 3.16	Immunization Registry The statewide immunization registry is maintained by the Department for Public Health and its connectivity with the KHIE is currently in the pilot stage. (August 2010)	The KHIE-to-KY IR interface for submission of immunization data is complete and operational and has been since July, 2011.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step 3.17	Notifiable & Syndromic Surveillance Reporting Standardize electronic laboratory and morbidity reports for 12 reportable diseases against the NEDSS base system application vocabulary, version 3. The harmonization step will allow any receiving system that can recognize NBS concepts to accurately interpret the content of the message and act on it appropriately. This will support the electronic exchange of notifiable and syndromic surveillance using the KHIE framework.	The interface with the DPH system is complete and is being reviewed for compliance with Stage 2 Meaningful Use requirements. A pilot with the State Lab will be operational by 4th quarter 2012 and roll-out to other data providers will commence. The addendum to the participation for reportable diseases is complete and approved. The same interface will be repurposed for syndromic surveillance.
	Provide a Patient Portal	
Action Step 3.18	Continue development on a web-based patient portal as specified in the ACS scope of work	Development and release of a KHIE patient portal, as specified in the original scope of work has been deferred until a technical strategy for support of Stage 2 Meaningful Use measures can be completed.
Action Step 3.19	Use the mass media to communicate the value of the HIE to consumers and encourage and support use of the KHIE patient portal to create an entire state of activated patients [PA 16.0]	Ongoing
	Implement a Patient Consent Model	
Action Step 3.20	Develop an "Opt-Out" model for patient consent [PS 1.0]	Refer to Action Step 4.14. KHIE is using a no further consent required model.
ONC Technical Infrastructure Domain Requirement	Develop or facilitate the creation and use of shared directories and technical services, as applicable for the state's approach for statewide HIE; shared services may include but are not limited to: patient matching, provider authentication, consent management, secure routing, advance directives and messaging	

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step 3.21 ONC Technical Infrastructure Requirement T.1 PIN July 6, 2010 PIN Update June 1, 2012	The KHIE's directories and technical services are available to other HIEs which connect to the KHIE In addition to a Master Patient Index (MPI) and Record Locator Service (RLS) The KHIE Exchange Framework includes: • Exchange/Clinical Messaging • EMR-Lite • e-order (lab order/response) • e-prescribing • Provider portal to a virtual health record The KHIE Framework will also include: • Clinical Rules • Comprehensive Patient Care Summary • Medicaid claims data (currently up to 2 years; goal is 5 years) The framework will support consent management which is expected to be added later (Refer to Action Step 4.14)	At this point in time KHIE has made connectivity to HealthBridge, however it is around only one (large) provider in Northern KY. There have also been discussions with a number of large provider organizations in the state who are working to build internal HIEs. These are Norton Healthcare, Baptist Healthcare and Kings Daughter Medical Center. Initial discussions have been held with all three but no distinct progress has been noted. As these HIEs evolve and true HIE to HIE connectivity occurs (which we expect to be XDS) KHIE will make available the directories and technical services within its framework.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
ONC Technical Infrastructure Domain Requirement	Leverage existing regional and state level efforts and resources that can advance HIE	
	Broadband Access	
Action Step 3.22	Assess the needs of the healthcare providers and organizations in securing high speed Internet access as part of the SMHP environmental analysis [PA 14.0]	KHIE is fully engaged in supporting the efforts of the Commonwealth Office of Technology (COT) in spreading the availability and adoption of broadband access in the Commonwealth. KHIE has lent its resources to survey our citizens for broadband access as well as provided any information about broadband availability in the state to COT.
Action Step 3.23	Evaluate the provisions and pricing structure of the Kentucky Information Highway (KIH2) contract to identify how it might be used to support access to increased bandwidth for the medical community, including private for-profit practices [PA 15.0]	The use of the KIH2 resources will be reviewed for permissibility as a transport mechanism for private sector services.
Action Step 3.24	Monitor the Federal rulemaking for the USAC (Universal Service Administration Company) FCC National Broadband Plan that goes into effect in 2011 and recommend that the KIH2 contract be brought in-line with the new pricing structure [PA 18.0]	KHIE is participating with the KY Commonwealth Office of Technology in their lead on this approach.
	IT Workforce	
Action Step 3.25	Assess the availability of local/regional IT support and report these findings to the Council on Postsecondary Education and the Kentucky College and Technical College System [PA 8.0]	The State HIT Coordinator/GOEHI has established a close relationship with Jefferson Community & Technical College (JCTC), the HITECH funded entity in KY. The State HIT Coordinator sits on JCTC Steering Committee for HIT Workforce Development. The Executive Director from JCTC joins the State HIT Coordinator in speaking events. This will continue in 2012 to 2013.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step 3.26	Invite the respective KCTCS HIT workforce development programs to participate in the planning and implementation of the KHIE regional outreach and connectivity efforts	Executive Director from JCTC will be invited to sit on one of our Committees this year.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
	Support for Provider Adoption & Meaningful Use	
Action Step 3.26 PIN July 6, 2010	Work closely with the Commonwealth's two RECs and RHIOs to coordinate efforts with the various stakeholder organizations; avoid duplication; monitor provider adoption & meaningful use; and coordinate resources [PA 1.0] [PA 19.0]	The State HIT Coordinator/GOEHI is included in the RECs weekly operational call and is a consistent agenda item. The State HIT Coordinator holds a biweekly call with the two RECs, NE KY RHIO, Medicaid, Health Care Excel (QIO) to specifically address KHIE and meaningful use efforts. Please also see action step 2.4 regarding the KY Collaborative MU Workgroup established by the State HIT Coordinator.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step 3.27	Employ a systems approach to capitalize on existing referral networks when conducting outreach while coordinating efforts with the RECs Prioritize larger hospitals and regional medical centers, affiliated primary care practices, and their referring community hospitals when establishing connectivity [PA 5.0, 6.0, 7.0]	**The Outreach/Communications strategy for 2012 does prioritize the larger hospitals and hospital systems.** Essentially all the large hospital systems in the Commonwealth of Kentucky have signed with the Kentucky Health Information Exchange. The following large hospital systems have signed participation agreements with KHIE: 1. Appalachian Regional Healthcare, Inc. 2. Norton HealthCare 3. Owensboro Medical Health Systems 4. Kings Daughter Medical Center Systems 5. Baptist HealthCare 6. University of Louisville 7. University of Kentucky 8. Trover Medical System 9. Bowling Green Medical Center These organizations are all at different levels of connectivity with KHIE. Several have been connected for a year or longer, some have just signed agreements. Subsequently the work effort over the next year will be to get connectivity accomplished for all, including the systems that are working on their own internal health information exchanges.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step 3.28	Coordinate adoption assistance and connectivity to the KHIE with the RECs for eligible primary care providers through joint planning activities and regularly scheduled meetings between GOEHI and the RECs; routinely consult and coordinate with the Kentucky Medical Association, Dental Association, Optometric Association, Chiropractic Association, Nurses Association, Kentucky Pharmacists Association, etc. and support widespread dissemination of resources that educate and direct providers to the RHIO's, RECs and other sources of information [PA 1.0, 2.0, 9.0, 12.0]	Effective August 2010-Ongoing.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step 3.29 PIN July 6, 2010	In conjunction with development of the SMHP, develop a plan and identify strategies for assisting non-eligible providers in achieving adoption and meaningful use [PA 3.0]	Representatives from KMA and KHA reside on the KHIECC. The following initiatives focus on non-eligible providers: • SAMHSA Funding and initiative – behavioral health; • Office of Veterans Affairs – three skilled facilities in Kentucky have been provided access to the KHIE Community Portal.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step 3.30	Document the extent to which non-eligible provider organizations such as rehabilitation hospitals, behavioral health in-patient and out-patient facilities, long term care facilities, home health agencies, hospice, and other non-eligible health care providers have adopted EMRs and are engaging in HIE Identify ways in which the use of the provider portal and the EMR-Lite could be used to coordinate care with the patient's PCP and other healthcare providers and promote the use of these products among those without an EMR [PA 3.0]	To be completed during the third project year prior to the annual update of the State HIE Strategic and Operational Plan during December 2012-2013 GOEHI as the lead working in collaboration with the RECs and professional organizations and providers representing the needs and interests of non-eligible providers, including the state department for aging services, public health departments, community mental health centers, etc. **2012-2013:** KHIE has already been working in a number of arenas of non-eligible providers, specifically the **Office of Veteran's Affairs** and the community mental health centers. **SAMHSA initiative – behavioral health** Office of Veterans Affairs: KHIE has worked with the three skilled facilities in Kentucky and provided them with access to the KHIE Community Portal (Virtual Health Record). **Free Clinics** – KHIE has started working with communities where free clinics are based. The first was in the Ephraim McDowell Medical Center Region. The free clinic there was provided access to the KHIE Community Portal.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step3.31 *Corresponds to Action Step 2.8*	Involve physicians through the establishment of a clinical advisory workgroup in determining the information they receive through the KHIE and the functionality that is needed to support their practices, including advanced clinical decision support and care management tools as a service of the HIE [PA 4.0, 13.0]	This new workgroup will be convened by GOEHI no later than July 15, 2012 to serve in an advisory capacity during evaluation of the KHIE.
Action Step 3.32	Support the use of evidence-based practices by physicians during the planning and implementation of EMR systems by links on the GOEHI website to the RECs, Agency for Healthcare Research and Quality (AHRQ), and other sites [PA4.0]	Complete/ongoing.

Goal 3.0 **Coordinate Statewide Efforts to Support Meaningful Use and Assure that Providers have Access to at least One Option for Use in Meeting Stage 1 Meaningful Use Requirements with Functionality Incrementally Developed thereafter to support the additional Requirements that will be phased in to raise the Bar for Performance and Quality (PIN July 6, 2010)**		
Action Step 3.33	Enlist the support of existing resources such as the Area Health Education Centers (AHECs) and undergraduate and graduate, medical, nursing, and other health professions education programs during the implementation of the KHIE regionally to support local providers [PA 10.0]	GOEHI collaborates with all the HITECH programs in KY in the education of providers and other stakeholders for HIT and Meaningful Use. A collaborative continuing education program is produced and provided at least annually in regions across the state. This includes KHIE, the RECs, and HIT Workforce Development. The AHECS across the state coordinate these events. Fall – Winter 2012.
Action Step 3.34	Enlist the support of, coordinate efforts, and share information with state and local associations for practice managers and health data professionals [PA11.0]	GOEHI will coordinate with the RECs to participate in the KY MGMA Spring and Fall programs. Other association events: • KY Pharmacy Association; • KY Primary Care Association; • KY Diabetic Network; • KY Academy of Family Physicians; • UK Family Medicine Review.

5.4 – UPDATED KHIE PROJECT MANAGEMENT PLAN: GOAL 4.0

Goal 4.0 **Assure trust of information sharing through the development of a privacy and security framework for State HIE efforts that aligns with the HHS HIT Privacy and Security Framework (PIN July 6, 2010)**		
ONC Legal & Policy Requirement L.2	Develop a privacy and security framework that supports incremental development of HIE policies over time, enables appropriate inter-organizational HIE, and meets other important state policy requirements such as those related to public health and other vulnerable populations	
	ACTION REQUIRED	**EXECUTION**
Action Step 4.1	Develop policies and procedures for preserving the privacy and security of health data exchanged through the KHIE to assure compliance by the KHIE and its subcontractors with the standards of HIPAA Privacy and Security Rules applicable to Business Associates of HIPAA covered entities [PS 2.0]	Please reference 'Privacy & Security' PIN under Section IV.
Action Step 4.2	Develop policies and procedures to address: positive patient identification for data returned to the requestor; standards for establishing data elements required as part of the request process; standards for identifying provider of patient data (source); encryption of data in transit and during vendor caching for the HIE; standards that define participant's responsibilities in dealing with identifying internal uses of HIE data; Master Patient Indexing standards; and timing and procedures related to caching of data [PS 2.1]	
ONC Legal & Policy Requirement L.3	Implement enforcement mechanisms and have appropriate safeguards in place to protect health information	
Action Step 4.3	Develop policies and procedures to manage breaches and misuse of health information [PS 3.0]	Please reference "Privacy & Security" PIN under Section IV.
Action Step 4.4	Develop policies and procedures to address enforcement obligations [PS 3.1]	

Goal 4.0 **Assure trust of information sharing through the development of a privacy and security framework for State HIE efforts that aligns with the HHS HIT Privacy and Security Framework (PIN July 6, 2010)**		
Action Step 4.5	Develop policies and procedures to encourage participants to notify the KHIE of known inaccuracies and mismatches of data shared through the KHIE [PS 3.7]	Please reference "Privacy & Security" PIN under Section IV.
ONC Legal & Policy Domain Requirement	Minimize obstacles in data sharing agreements	
Action Step 4.6	Consider the Participation Agreement as a living document that will be modified as necessary to: implement changes to the initially contemplated structure of the KHIE; require additional or different obligations of or restrictions on the parties; address obligations of Participants who are not HIPAA covered entities; and address changes in applicable laws and/or guidance [PS 4.0]	Please reference "Privacy & Security" PIN under Section IV.
Action Step 4.7	Add provisions to the Participation Agreement for Participants who are covered by the federal law that protects the confidentiality of substance abuse records, 42 CFR Part 2 (Part 2), to enable such Participants to share protected substance abuse records with KHIE as a qualified service organization [PS 4.1]	

Goal 4.0 **Assure trust of information sharing through the development of a privacy and security framework for State HIE efforts that aligns with the HHS HIT Privacy and Security Framework (PIN July 6, 2010)**		
ONC Legal & Policy Domain Requirement	Identify and harmonize federal and state legal and policy requirements that enable appropriate HIE services that will be developed over the first two years	
Action Step 4.8 ONC Legal & Policy Requirement L.6	Address and reconcile the inconsistencies of health care facility licensing regulations [PS 5.0]	GOEHI staff along with members of the *Privacy & Security Committee* have reviewed all health care facility licensing regulations and made recommendations that to reconcile the inconsistencies that are barriers to the electronic exchange of medical records. GOEHI staff arranged meetings with CHFS staff and with the Office of the Inspector General (OIG) staff and presented the possible regulatory changes. These changes are awaiting regulatory action by CHFS and the Office of the Inspector General.
Action Step 4.9	Address the need for special requirements under federal and state law relative to sensitive patient information [PS 5.1]	Kentucky applied for and received a sub award from the National Council for Community Behavioral Healthcare (NCCBH). This award will allow Kentucky to work toward a consent protocol to share behavioral health records and alcohol and drug abuse treatment records through the KHIE. This work should be completed by December 31, 2012. GOEHI has reviewed the state HIV statutes and worked with the CHFS Cabinet Secretary and determined that HIV test results will not be shared through the exchange.

Goal 4.0 **Assure trust of information sharing through the development of a privacy and security framework for State HIE efforts that aligns with the HHS HIT Privacy and Security Framework (PIN July 6, 2010)**		
Action Step 4.10	Review legal analyses performed by states bordering KY to determine inconsistencies with Kentucky's requirements for the electronic exchange of health information and identify the best options for addressing the inconsistencies and facilitating HIE [PS 5.2]	This issue is no longer viewed as a barrier to exchange by Kentucky. GOEHI staff attended presentations by leading legal experts in the field of HIE and the consensus is currently as follows: A patient receiving health care in Kentucky by a Kentucky provider will send information to KHIE according to Kentucky state law. In turn KHIE can send that information to any HIE requesting the information even if the Kentucky information is not allowed to be shared in the requesting jurisdiction. The information was allowed to be collected and exchanged in Kentucky so it can be shared according to Kentucky state law without concern for where the information may ultimately be sent or without the need for filtering out information according to the laws of the requesting state. Until GOEHI learns of a change in this consensus opinion this Action Step is completed.
ONC Legal & Policy Domain Requirement	Ensure policies and legal agreements needed to guide technical services are implemented and evaluated as part of annual program evaluation	
Action Step 4.11	Establish programs to audit and monitor KHIE compliance; investigate the feasibility of using an independent firm to perform a defined level of auditing on a regular basis, such as annually [PS 3.3]	See the "Privacy and Security" PIN under Section IV.
Action Step 4.12	Maintain audit logs for tracking and investigation purposes [PS 3.5]	It is a function of the KHIE Framework.
Action Step 4.13	Develop protocols for routine penetration testing [3.1]	KHIE Vendor(s) as part of the contractual scope of work
ONC Legal & Policy Domain Requirement	As the KHIE matures, identify additional types of data that should be available within the KHIE and develop policies and procedures relevant to access and use of data, including the development of an "Opt-Out" model for patient consent that also accommodates specific consent to disclosure when specially protected health information is available for exchange and can be managed within the confines of available staff and not be burdensome to participating providers	
Action Step 4.14	Develop an "Opt-Out" model for patient consent (defer until the KHIE framework can support the opt-out function) [PS 1.0]	Action items and timeline to be developed during the third project year prior to the annual update of the State HIE Strategic and Operational Plan during December 2012-2013 for implementation

Goal 4.0 **Assure trust of information sharing through the development of a privacy and security framework for State HIE efforts that aligns with the HHS HIT Privacy and Security Framework (PIN July 6, 2010)**		
Action Step 4.15	Delay exchange of specially protected information with Participants through the KHIE until such time as it has developed a process for obtaining patient consent that meets the requirements of the federal and state laws that afford greater protection than HIPAA's Privacy Rule [PS 1.1]	during 2013.
Action Step 4.16	Once the Opt-Out process is determined, educate patients about their options and provide a broad range of resources to make patients aware of the benefits of participating in the KHIE and their options for controlling their own medical information [PS 1.2]	
Action Step 4.17	Once the Opt-Out process is determined, educate providers about patient options in order to manage questions at the point of care [PS 1.3]	
ONC Legal & Policy Requirement 0.2	Annually update the State HIE Plan to address the implementation and evaluation of policies and legal agreements related to HIE	
Action Step 4.18 ONC Legal & Policy Requirement L.4	Update Strategic and Operational Plan annually *(Corresponds to Action Step 1.12)*	First update due June 11, 2012, in progress. Update due June 2013.

5.5 – UPDATED KHIE PROJECT MANAGEMENT PLAN: GOAL 5.0

<table>
<tr><td colspan="3">Goal 5.0
Support alignment of HIE with Medicaid, Public Health Programs, Behavioral Health and Other Federally Funded State and Local Health Care Programs (PIN July 6, 2007)</td></tr>
<tr><td>July 6, 2010 PIN Requirement</td><td colspan="2">Establish an integrated approach including having both programs represented in the state's governance structure and processes</td></tr>
<tr><td></td><td>ACTION REQUIRED</td><td>EXECUTION</td></tr>
<tr><td>Action Step 5.1</td><td>The KHIE Coordinating Council's membership includes the CEO of a Federally Qualified Health Center who also serves as Chair of the Provider Adoption & Meaningful Use Committee

He will facilitate the signing of a memorandum of understanding between GOEHI and the Kentucky Primary Care Association to expedite connectivity between the KHIE and the state's FQHCs
The Commissioners of the Department for Medicaid Services, Department for Public Health, and Behavioral Health are members of the KHIE Coordinating Council
The Commissioner of the Department for Public Health provides oversight for the State's Title V Maternal Child Health Program & the Ryan White AIDS Program
The Assistant Director of the Kentucky Office of Rural Health serves on the KHIE Coordinating Council and is a member of the Provider Adoption & Meaningful Use Committee
Each of the state's two RECs is represented on the KHIE Coordinating Council</td><td>This CEO now works for one of the managed Medicaid organizations so it was decided to have him remain as a member of the KHIECC. The Chair of the Provider Adoption & Meaningful Use Committee is now the CMIO of one of the largest healthcare systems in Kentucky.

We are currently recruiting the Deputy Executive Director of the KY Primary Care Association to be a member of the KHIECC. We have been actively working with her to expedite connectivity between KHIE and FQHC's across the state. To date we have signed Participation Agreements with nineteen (19) FQHCs. Nine have live connections with KHIE (Big Sandy Healthcare, Healthfirst Bluegrass, and Regional Healthcare Affiliates).

These members remain constant and are very active in facilitating the integration of KHIE with their respective domains (Public Health, Behavioral Health).

These members have remained constant and are still very engaged with KHIE.</td></tr>
</table>

Goal 5.0 **Support alignment of HIE with Medicaid, Public Health Programs, Behavioral Health and Other Federally Funded State and Local Health Care Programs (PIN July 6, 2007)**		
Action Step 5.2	During implementation of the KHIE regional rollouts, staff from GOEHI will outreach to the VA hospitals and health centers to inform them about the KHIE and discuss connectivity and sharing of information	GOEHI has worked with the Office of Veteran's Affairs to provide access to the KHIE Community Portal to their three skilled facilities in Kentucky.
Action Step 5.3	Annually update the State HIE Plan to address statewide HIE alignment with other federal programs	Update in progress.
	A Population Health Committee has been created to advise the KHIE Coordinating Council on population health issues, many of which directly involve or overlap with federally funded state and local health care programs; their recommendations follow:	
Action Step 5.4	Adoption of a guiding set of principles to underscore the collection and use of population health data in support of a learning health system [PH 1.0]	KHIE now provides the only HIE based connectivity to the state Immunization Registry. The KHIE is now in pilot testing of the connectivity to the state Cancer Registry. The KHIE is by the very fact of being the only state-wide live HIE available in Kentucky moving the standard of effective delivery of healthcare to a better, more efficient level of care.
Action Step 5.5	Use of an integrated approach with state and local public health agencies to support providers in achieving meaningful use and in identifying opportunities to involve public health beyond meaningful use [PH 2.0]	GOEHI, the DPH, DMS, and the KHIECC *Population Health Committee* will continue to pursue opportunities to the long-term vision of robust public health surveillance supported by state-based health information exchanges. This activity is on-going.

Goal 5.0 **Support alignment of HIE with Medicaid, Public Health Programs, Behavioral Health and Other Federally Funded State and Local Health Care Programs (PIN July 6, 2007)**		
Action Step 5.6	Support for the modernization of state and local public health systems so that they are fully interoperable with the KHIE (and by extension, those of hospitals and other healthcare providers) [PH 4.0]	KHIE promotes and supports the adoption of data exchange standards described by the Public Health Information Network (PHIN), a set of standards and best practices developed by the CDC to interoperate primary data sources with secondary use surveillance system. For example, a PHIN standard is being used by the KHIE to connect provider to the immunization registry. The KHIE is planned to have the ability to automatically capture all required state Public Health reporting by year-end 2012.

Goal 5.0 **Support alignment of HIE with Medicaid, Public Health Programs, Behavioral Health and Other Federally Funded State and Local Health Care Programs (PIN July 6, 2007)**		
Action Step 5.7	Development of policies and procedures to guide the collection and use of population health data including privacy; appropriate use and access limitations; data ownership; patient consent; individual choice and awareness of how data are to be used; quality and integrity; timely bi-directional exchange; streamlined reporting requirements; and mechanisms for transparency and availability [PH 5.0]	GOEHI staff in consultation with the DPH, the KHIECC *Population Health* and *Privacy and Security Committees*, will draft policies and procedures by July 2012 and/or in alignment with Meaningful Use criteria that may be developed for population health beyond Meaningful Use Stage 1. All data exchanges are governed by legally binding Participation Agreements between healthcare providers and KHIE. These Agreements follow publicly available published Policies and Procedures that cover privacy, appropriate use of PHI data, access limitations, data ownership, patient consent, individual choice and awareness of how data is to be used, quality and integrity, timely bi-directional exchange, streamlined reporting requirements and mechanisms for transparency and availability.

Goal 5.0 **Support alignment of HIE with Medicaid, Public Health Programs, Behavioral Health and Other Federally Funded State and Local Health Care Programs (PIN July 6, 2007)**		
Action Step 5.8	Utilization of existing registries of population health data in support of improving population health [PH 6.0] Utilization of population health data to identify and address health disparities to improve the health of at-risk and other vulnerable populations and support access to existing healthcare resources [PH 6.1] Utilization of population health data to assess the healthcare needs of the community to guide the deployment of finite resources in ways that maximize impact and demonstrate value [PH 6.2] Communication of essential health information, including population health findings, through diverse channels to support improvements across the continuum of personal, community and population health to elevate the health of all Kentuckians [PH 6.3] Promotion of the use of patient portals and other types of personal electronic health records to engage and empower patients to take an active role in their health and their health care [PH 6.4]	GOEHI staff in consultation with the DPH, the *Population Health Committee*, and the *Privacy and Security Committee* will draft policies and procedures by July 2012 and/or in alignment with Meaningful Use criteria that may be developed for population health beyond Stage 1. The KHIE ties in the use of the Public Health Reportable Disease System, the Cancer Registry, Immunization Registry and the services of the State Lab to promote the improvement of public health in the Commonwealth.

Goal 5.0 **Support alignment of HIE with Medicaid, Public Health Programs, Behavioral Health and Other Federally Funded State and Local Health Care Programs (PIN July 6, 2007)**		
Action Step 5.9	Identification of emerging issues, including the implementation of Federal health care reform legislation that impact and/or create opportunities to improve population health through health information exchange [PH 7.0]	GOEHI, DPH, the KHIECC, and the *Population Health Committee* are actively involved in the review of Federal health care initiatives for the opportunity to include such initiatives in the functionality of the KHIE. Ongoing.

5.6 – UPDATED KHIE PROJECT MANAGEMENT PLAN: GOAL 6.0

Goal 6.0 **Ensure Consistency of HIE Services with National Policies and Standards**		
July 6, 2010 PIN Requirement	Ensure HIE services funded through the State HIE Cooperative Agreement are consistent with national standards, NHIN specifications, federal policies and guidelines, and are based on technologies that are adaptable and flexible for future requirements, including exchange of information across state boundaries	
	ACTION REQUIRED	**EXECUTION**
Action Step 6.1	Keep providers/administrators informed and up-to-date on new developments [IS 1.0] Create a WIKI/Blog/SharePoint, Listservs and e-newsletters for use in sharing various tools, information and techniques [IS 1.1] State membership and participation in standards committees and organizations such as HL7 and certifying organizations [IS 1.2] Communication through forums (both virtual and real), newsletters and meetings to discuss the current state of KHIE and future plans [IS 1.3]	**2012 – 2013:** The Interoperability and Standards Committee of the KHIECC meets monthly by conference call with meeting notices placed on the GOEHI website for participation by interested parties (ongoing). OATS HIE staff will provide monthly updates to the GOEHI website and through Gov.Delivery (sent as listserv and/or as a newsletter). This activity is ongoing. OATS HIE staff members, including the CTO participate in the national EHR/HIE Interoperability Workgroup, representing Kentucky.

Goal 6.0 **Ensure Consistency of HIE Services with National Policies and Standards**		
Action Step 6.2	Identify strategies for leveraging current public and private HIE capabilities to complement and support ONC requirements by assessing HIE capabilities through a survey to identify and develop complementary functionality, standards of compatibility, and integration of Master Patient Index (MPI) and Record Locator Service (RLS) capabilities [IS 2.0]	Coordinate with the readiness assessment questionnaire that will be developed and completed by hospitals wishing to connect to the KHIE; identify other organizations, entities, HIE, etc. that should be part of the survey; develop questionnaire and administer as an on-line survey The survey will be conducted in the Fall of 2012.
Action Step 6.3	Pursue the development of future functionality, with the following priorities in mind [IS 3.0]: 1. KHIE should become the **on-ramp to state registries** that are required by ARRA (i.e., immunization, syndromic surveillance, & reportable lab data). 2. Incorporate **bi-directional functionality** with existing networks (Regional, State and National). 3. Develop **master facility and master clinician database.** 4. Develop **secure messaging.** 5. Develop and agree to **unique identifiers for patients.** 6. Develop **tools for federated MPI's and RLS** as the KHIE reaches out into other HIEs. 7. Become the **on-ramp to the NHIN.** 8. Understand **"brokers" medical information systems vendor's approaches** to the problem (i.e. McKesson /Relay Health, Emdeon, Availity, Surescripts, etc.)	KHIE has become the on-ramp to state registries as required by ARRA. This includes immunizations, syndromic surveillance, & reportable labs. KHIE is also currently working on connectivity with the KY Cancer Registry. 1. KHIE just connected successfully with Health Bridge, but this is currently uni-directional. Under development (Refer to State Plan narrative). 2. Ongoing discussion. 3. RFP for Direct has just been released. 4. Under development (Refer to State Plan narrative). 5. Under development (Refer to State Plan narrative). 6. Under development (Refer to State Plan narrative). 7. To be assessed and reported during readiness assessment completed by hospitals wishing to connect to the KHIE; to be determined during KHIE participation during the RFP process and the selection of EMR vendors by the RECs for the EMR purchasing program. Findings will be reported to the I&S Committee as they become available.

Goal 6.0 **Ensure Consistency of HIE Services with National Policies and Standards**		
Action Step 6.4	Continue to identify interdependencies and risks; develop mitigation strategies to address these risks. [IS 4.0]	Interoperability and Standards Committee, KHIE Vendor(s), and OATS HIE staff on a regular basis in conjunction with *I&S Committee* Meetings Ongoing.

V. TRACKING PROGRAM PROGRESS

6.1 – TRACKING KHIE PROGRAM PROGRESS

The programmatic progress of KHIE is well documented throughout the various sections of this report. To date, KHIE has made great progress in both the strategic planning and operations arenas, which have been guided by input from the KHIECC committees, evaluation efforts, and day to day work of the KHIE staff members. This guidance, along with additional input from stakeholders interested in broadening the use of HIE across the Commonwealth have led to substantial growth and progress that is anticipated to continue as KHIE services keep evolving and demand for them grows in the provider community.

The KHIE Project Management Plan contained in Section IV of this Updated Strategic and Operational Plan is a comprehensive document that details the programmatic progress KHIE has made toward achieving the goal of developing HIE services across Kentucky. Data points such as the number of providers and hospitals connected to KHIE, percent of pharmacies participating in e-prescribing and the percent of labs sending electronic messages, etc. are located in both the Evaluation Section (Section II) and Appendix C. of this update. Progress addressing the Privacy and Security Framework under which KHIE operates has been addressed in Section IV and Exhibits 1-10, which are noted Appendix H.

For detailed information on each of the following areas, please see the sections listed below.

- Sustainability and Evaluation: Sections II and III; Appendices C, D, E, F and G.
- Overall Program Progress and Project Management: Sections II, III and IV; Appendices A and C.
- Privacy and Security Framework: Section IV; Appendix H (PDF files containing Exhibits 1-10.

VI. APPENDICES

APPENDIX A

Changes to HIE Strategy

Domain/Sections	Short Description of Approved Portion of SOP that Grantee is Proposing to Change (include page numbers)	Proposed Changes	Reason for the Proposed Changes	Budget Implications of Proposed Changes
Include in First and Subsequent SOP Updates				
Overall HIE Strategy including Phasing	No Change			
Governance				
Technology				
Financial				
Business Operations				
Legal/Policy				
Strategies for e-				
Strategies for Structured Lab Results Exchange				
Strategies for Care Summary Exchange				
The Core Documents Are Required As Part Of First SOP Update. Changes Should be Indicated in Subsequent SOP Update				
Sustainability				
Privacy and Security Framework				
Evaluation Plan				

APPENDIX B

Measure Definitions and Sources to be used in completing *Tracking Program Progress* (Appendix C)

PIN Priority	Numerator	Denominator	Source
1. % of pharmacies participating in e-prescribing	Number of pharmacies that sent or received any electronic new prescription, refill request, or refill response messages in December of the former year via Surescripts network	Total number of licensed pharmacies operating in the state (per NCPDP)	Surescripts/NCPDP data ***ONC will provide data to Grantees***
2. % of labs sending electronic lab results to providers in a structured format[3]	Number of hospital and independent clinical laboratories that send electronic lab results to ambulatory care providers in a structured format	Total number of hospital and independent clinical laboratories that respond to census	*Numerator: data collected through Grantee's lab census (a sample instrument will be provided following the release of this PIN)* *Denominator: Census should target all labs in "hospital" and "independent" lab categories, including LabCorp and Quest, in CLIA OSCAR database (http://wwwn.cdc.gov/clia/oscar.aspx)*
			Grantee assesses. ONC will provide a sample instrument.

[3] **Structured format:** Documentation of discrete data using controlled vocabulary, creating fixed fields within a record or file, or another method that provides clear structure to information (is not completely free text).

PIN Priority	Numerator	Denominator	Source
3. % of labs sending electronic lab results to providers using LOINC	Number of hospital and independent clinical laboratories that send electronic lab results to ambulatory care providers using LOINC	Total number of hospital and independent clinical laboratories that respond to survey	*Numerator: data collected through Grantee's lab census Denominator: Census should target all labs in "hospital" and "independent" lab categories, including LabCorp and Quest, in CLIA OSCAR database (http://wwwn.cdc.gov/clia/oscar.aspx)* ***Grantee assesses. ONC will provide a sample instrument.***
4. % of hospitals sharing electronic care summaries with (a) unaffiliated hospitals and (b) unaffiliated providers	Number of non-federal acute care hospitals sharing electronic clinical care summaries with the following entities as reported in the AHA HIT Supplement survey: a. Hospitals outside their system b. Ambulatory care providers outside their system	Total number of non-federal acute care hospitals responding to AHA HIT supplement survey	AHA HIT supplement survey ***ONC will provide data to Grantees annually. Grantees may expect an annual release in December or January.***

PIN Priority	Numerator	Denominator	Source
5. % of ambulatory providers electronically sharing care summaries with other providers	Number of ambulatory care, office-based physicians who share electronic clinical summaries or summary of care records with other providers	Total number of ambulatory care, office-based physicians who responded to the survey	National Ambulatory Medical Care Survey (NAMCS) Electronic Medical Records (EMR) Supplement (also known as National Electronic Health Records Survey) ***ONC will provide data to Grantees annually. Grantees may expect an annual release in December or January.***
6. Public Health agencies receiving ELR data produced by EHRs or other electronic sources in HL7 2.5.1 format with LOINC and SNOMED.	1= Yes 0= No (or %)		Grantee assesses

PIN Priority	Numerator	Denominator	Source
7. Immunization registries receiving electronic immunization data produced by EHRs in HL7 2.3.1 or 2.5.1 formats using CVX codes.	1= Yes 0= No (or %)		Grantee assesses
8. Public Health agencies receiving electronic syndromic surveillance data from hospitals produced by EHRs in HL7 2.3.1 or 2.5.1 formats (using CDC reference guide)	1= Yes 0= No (or %)		Grantee assesses
9. Public Health agencies receiving electronic syndromic surveillance ambulatory data produced by EHRs in HL7 2.3.1 or 2.5.1 formats.	1= Yes 0= No (or %)		

APPENDIX C

See Appendix B for measure definitions and sources

Tracking Program Progress

	Report in first SOP update		Report January, 2013		Report January, 2014	
Program Priority	**Status as of December, 2011**	**Target for December, 2012**	**Status as of December, 2012**	**Target for December, 2013**	**Status as of December, 2013**	**Target for end of grant period**
1. % of pharmacies participating in e-prescribing	92.7%	97%				
2. % of labs sending electronic lab results to providers in a structured format[4]	43%	50%				
3. % of labs sending electronic lab results to providers using LOINC	26%	35%				
4. % of hospitals sharing electronic care summaries with unaffiliated hospitals and providers	21.21%	45%				

[4] **Structured format:** Documentation of discrete data using controlled vocabulary, creating fixed fields within a record or file, or another method that provides clear structure to information (is not completely free text).

	Report in first SOP update		Report January, 2013		Report January, 2014	
Program Priority	**Status as of December, 2011**	**Target for December, 2012**	**Status as of December, 2012**	**Target for December, 2013**	**Status as of December, 2013**	**Target for end of grant period**
5. % of ambulatory providers electronically sharing care summaries with other providers	25.47%	40%				
6. Public Health agencies receiving ELR data produced by EHRs or other electronic sources. Data are received using HL7 2.5.1 LOINC and SNOMED. **Yes/no or %**	0=No	1=Yes 100%				
7. Immunization registries receiving electronic immunization data produced by EHRs. Data are received in HL7 2.3.1 or 2.5.1 formats using CVX code. **Yes/no or %**	1=Yes	1=Yes 100%				

	Report in first SOP update		Report January, 2013		Report January, 2014	
Program Priority	**Status as of December, 2011**	**Target for December, 2012**	**Status as of December, 2012**	**Target for December, 2013**	**Status as of December, 2013**	**Target for end of grant period**
8. Public Health agencies receiving electronic syndromic surveillance hospital data produced by EHRs in HL7 2.3.1 or 2.5.1 formats (using CDC reference guide). Yes/no or %	0=No	1=Yes 50%				
9. Public Health agencies receiving electronic syndromic surveillance ambulatory data produced by EHRs in HL7 2.3.1 or 2.5.1. Yes/no or %	0=No	1=Yes 50%				

APPENDIX D

KHIE Evaluation Study Design and Methodology Summary

Evaluation Study Design

The research design for the KHIE assessment consists of both qualitative and quantitative components. Data are collected across methodologies to address each question and each of the research instruments and activities are used also used across the questions. The structured lab analysis and e-prescribing analysis used unique methodologies while the other research questions were supported by multiple research designs. Therefore, the descriptions of the study designs below are organized by methodology.

Laboratories Delivering Structured Results

Population: Per requirements of the PIN, this consisted of a census of the 188 independent and hospital labs within the Commonwealth.

Design: The questionnaire established by NORC was used as the foundation with two additional questions added concerning knowledge and use of health information exchange providers.

Methods: The questionnaire was made available online through Survey Monkey with an initial surface mailing from GOEHI to the lab directors at the 188 locations providing the link and asking them to complete the questionnaire. The 14-day response rate was 39%. A second surface mailing that included the online link and a hardcopy of the questionnaire was then sent to non-respondents. Subjects were asked to either fax a completed questionnaire to GOEHI or to complete the questionnaire online. At the 28 day point, the response rate was 51%. The third wave consisted of non-respondent laboratories being called directly and asked to complete the questionnaire on the telephone, return it via fax, or complete it online. At day XX the response rate was XX.

Data Analysis: The analysis consists of descriptive statistics and cross-tabs of the lab responses.

Pharmacies Participating in e-Prescribing

These data are for pharmacies across Kentucky and were collected by SureScripts and provided by ONC.

Server Log Analysis

Population: Under the KHIE Participation Agreement, Providers agree to allow the capturing of data for the purpose of assessment and the contracts for the vendors that provide the KHIE infrastructure require that they provide network metrics, including traffic logs. Therefore all locations that have reached "go-live" are included in the assessment. Depending upon the contract level (silver, gold, platinum), Providers have varying levels of participation relative to sharing data.

Methods: Data pushed and pulled from all locations that have a live interconnection to KHIE are collected on a monthly basis from vendor server logs.

Data Analysis: The traffic logs are analyzed on a Provider basis, this may include multiple locations. The data are analyzed longitudinally by Provider. Also, KHIE participation and traffic patterns are analyzed based upon geographic location and Provider characteristics such as number of licensed-beds.

Focus Groups

Population: Focus groups consist of KHIE users with subjects recruited across job functions that utilize the information exchange. The focus groups are stratified by geographic location, size, type of Provider, and length of connection to KHIE. To this point, two focus groups were held under the MTG and three focus groups under the Cooperative Agreement Grant.

Methods: A focus group protocol (see Appendix x) was developed and approved by the CHFS and NKU IRBs. Potential Provider sites are identified by Outreach Coordinators and selected based upon a stratified sample. Subject recruitment is undertaken by the participating Provider and is typically accomplished by the individual responsible for KHIE relationship. Subjects are recruited across job

Data Analysis: The focus groups are recorded and subject to standard content analysis. The individual focus groups are summarized in a formal report including conclusions, recommendations, and lessons-learned/best practices.

Surveys

Population: The objectives of the surveys are to contribute to the identification of barriers to adoption, critical success factors, utility of specific data elements, user interface issues, changes in work flow, and health information exchange at the point of care and in transitions in care. The survey was available online with open accrual. Outreach coordinators and Provider representatives were encouraged to recruit users of KHIE across job functions.

Methods: The survey instrument (see Appendix X) was developed upon an extensive review of the literature and approved by the CHFS and NKU IRBs. An open accrual method is used for subject recruitment.

Data Analysis: Subject accrual has been poor and upon review of the initial analyses, it has become apparent that respondents were confusing EHRs with HIEs. In effect the survey results were based upon a subject's perception and experience with the internal clinical system and not KHIE or other health information exchanges. We are in the process of revising the instrument in attempt correct this issue. The revised instrument will be subject to IRB approvals. This problem did not occur in the Focus Groups because of the ability to probe subjects during the discussion and provide a clarification that the discussion was about the use and experiences with the health information exchange, not the EHR.

Impact on Clinical Outcomes

Under the MTG, clinical outcomes were analyzed for the impact of connection to KHIE. This consisted of the data-mining of Medicaid claims data in order to address the research questions concerning clinical and economic outcomes. The methodological approach was designed to provide a foundation to support research continuing beyond the MTG. In the analysis there were numerous constraints including:

- The number of locations connected to KHIE
- The length of time connected to KHIE
- Differences in how providers were implementing, allowing access, and using KHIE
- Limitation of claims data

Analyses were undertaken concerning 13 clinical outcome research questions. The sample size was very limited and provided no inferential power. However, the efforts did provide a "proof of concept" for the analytical approach which is described below.

Based upon the experience of the MTG Assessment, GEOHI made a determination not to undertake an assessment of clinical outcomes during the first year of the Cooperative Agreement Grant. While the analytical approach exists, the limited amount of locations connected to KHIE and the limited amount of data exchanged would not provide meaningful research outcomes and the expenditure of resources and funds were not justifiable for this initial period. However, these expenditures could be justified as KHIE and health information exchange in general continued to grow and a longer time frame and richer data become available.

Population: The population for the analyses was Medicaid patients at locations connected to KHIE. At the time of the MTG Assessment, this was limited to one location. The study was limited to Medicaid patients because access to other patient population segments is not mandated by the Participation Agreements.

Methods: Based upon the research questions, operational definitions and measures were developed. Medicaid claims data for the 8 month period that the facility was connected to KHIE was compared to the eight month period in the prior year, pre-KHIE interconnection. Thus, a control group was developed. The clinical outcomes were based on standard measures for three disease states. The patient was the unit Medicaid patients were identified by unique membership numbers. ICD-9 diagnostic codes were used to identify the disease states, and claims data were used to identify treatment, and other factors such as ED use and hospital readmission rates. Claims data have well-documented limitations, but provided the only data source available under the Participation Agreement. While not robust enough for measuring clinical performance, they can provide measurement of readmissions, number of lab tests, emergency department use, timing and number of encounters, and some elements of patient adherence.

Data Analysis: SQL queries were developed to mine a 34 million element database of Kentucky Medicaid patients. The patient was the unit of analysis. The queries were based on extracting data that compared the treatment of patients at the facility post-KHIE interconnection to the same

period one year earlier, pre-KHIE interconnection. The data were successfully extracted to address the operational definitions associated with 13 clinical outcome questions. However, as described above, the limited timeframe, sample size, and data limitations did not provide inferential power. This did provide a "proof of concept" and lessons learned so that further analyses have been delayed until there are a longer timeframe for data collection and more robust data.

APPENDIX E

KHIE Evaluation Focus Group Findings

Background

The official launch of a KHIE market research program including focus groups occurred at the Kentucky e-Health Summit on September 7, 2011. The subjects for these groups will be stratified by geographic location, size and type of Provider. Initial focus groups were held at Harrison Memorial Hospital in Cynthiana, Ephraim McDowell Hospital in Danville and Rockcastle Regional Hospital in Mt. Vernon using an IRB approved protocol. The results for these focus groups are summarized below.

Harrison Memorial Hospital 11/07/11

The focus group consisted of a mix of KHIE users based upon position and responsibilities. This provided detail on KHIE use from a variety of perspectives and use cases. The group subjects consisted of two physicians, one pharmacist, three case managers, two clinical analysts and the hospital Chief Information Officer. These individuals represent the early adopters and principal users of KHIE.

Harrison uses the Continuity of Care Document (CCD) as provided by KHIE. They anticipate migrating to the Virtual Health Record (VHR) when their vendor, Medicity, can integrate the VHR with a single sign-on through the EHR and are satisfied with the response time to queries. Under current use, the CCD is easily accessed through a tab on the EHR. The CCD is non-sortable and data are listed chronologically. Users reported that there are some initial lab data populating the CCD as well as the claims data. The facility anticipates their next step to be rolling out KHIE to the Emergency Department. Leadership is uncertain whether they will wait until they migrate to the VHR or will introduce the CCD solution.

Finding #1: All of the participants found value in the CCD; particularly with patients not know to them. The limitations of the claims data were broadly acknowledged and discussed. All participants indicated that they are enthusiastic about the additional value that will be provided by the availability of clinical data.

Harrison Memorial has a relatively small catchment area and many of the patients are well known to the clinical staff. In cases where they were not familiar with the patient or had not seen the patient for a period of time, they found access to patient data through KHIE particularly useful. Participants also asked about the timing of the ability to receive data from the hospitals to which they typically refer to in Lexington.

Finding #2: The participants learned of KHIE informally and were trained through brief tutorials and on a one-to-one basis. Recommendations included use of peer-to-peer approaches for training and the use of physician champions to train other physicians. The view was that KHIE had provided all of the training necessary to Harrison staff to allow them to roll-out the service internally.

The CCD was demonstrated at a medical staff meeting by physicians and received interest. The chief concern is if initial use by clinicians is met with either technological issues, irrelevant data or missing data.

Finding #3: In terms of educational assistance, it was suggested that KHIE could provide best practices or lessons learned from other Providers who have implemented KHIE, particularly relative to the Emergency Department.

Finding #4: Participants found the CCD easy to access and navigate, but use often required too much scrolling and lacked the ability to sort.

Some concern was expressed about new users who will not scroll down a sufficient way in the CCD to find data. The principal recommendation for sorting concerned some type of ability to refine the search by date and diagnosis.

Finding #5: When expanding KHIE access to a broader user base in the facility, it is important to minimize the clickstream requirements and not require another log-in and password if possible.

Finding #6: There was discussion about the variance in how different vendors pull data & display them. The view was that differences between locations could create confusion and act as a barrier to adoption among physicians working at multiple facilities.

Finding #7: Participants have found value in using KHIE data as a "pointer" to identify locations from which to make document requests from other Providers or pharmacies to contact concerning medicine reconciliation.

Finding #8: The value found in KHIE differed to some extent based upon clinical role:

1. **Physician: medical history & diagnosis, previous tests, location of treatment, reconciliation. Not routinely used in work-flow unless an unknown or "service" patient. Need for labs and summary reports and to make the data more "usable." Value propositions identified: redundant testing, value in diagnosis, continuity of care, timely assistance with unknown patients.**

2. **Pharmacist: Medicine reconciliation, core measurements such as vaccines, narcotic seekers and doctor shoppers. Used in work-flow as needed, particularly with unknown patients.**

3. **Case Managers: Utilization review, case management and discharge planning. Used in work-flow as needed for unknown patients. See great potential use in the continuity of care, very positive response to the value of KHIE when they need to use it.**

4. **Clinical Analysts: Greatest KHIE Champions. Articulated the larger picture and value. Focus was on limitations such as the absence of clinical data, interface, and functionality.**

Finding #9: Participants identified the following perceptions as potential barriers to use:

1. **"Getting into" the system**
2. **A view that the CCD has "nothing on it"**
3. **Need to page too far into the CCD. Relevant data needs to be apparent.**
4. **Too much claims information over too long a period**
5. **Need clinical data. Enthusiastic that some lab data are beginning to appear.**

Finding #10: KHIE consider setting up user groups to allow staff to discuss best practices and issues with other providers.

Finding #11: There was a general discussion of concerns of security and HIPAA requirements. Need for KHIE to educate clinical staff that safeguards, audits, other controls are in place.

<u>Ephraim McDowell Hospital (3/20/12)</u>

Ephraim McDowell Health is a comprehensive, integrated healthcare delivery system that serves more than 119,000 residents from six counties in central Kentucky. At the core of the system is Ephraim McDowell Regional Medical Center, a non-profit, 222-bed licensed hospital that was established more than a century ago. The Ephraim McDowell Health system also includes Ephraim McDowell Fort Logan Hospital in neighboring Lincoln County. Their EHR vendor is Meditech. Users currently access KHIE through the VHR, but access through a CCD tab in EHR is being rolled out allowing single sign-on. The subjects included pharmacists, physicians, infectious disease specialists, a disease registry manager, and an information system manager.

Finding #1: Access to KHIE is widely available to physicians, nurses, pharmacists, infection control specialists, and disease registries. This greatly enhances the KHIE value proposition compared to locations which only allow physician access.

Finding #2: Users learned of KHIE through internal demonstrations and find the VHR "easy to use" and "user friendly." They also cited "good support people."

Finding #3: The subjects were positive about health information exchange and "see the potential for KHIE," but indicated that the data available on KHIE was 'not there yet' to provide a true value proposition to users, and physicians in particular. A low "hit rate" on queries, the lack current and "clean" information, and scarcity of clinical data were the primary criticisms.

Finding #4: The principal value for KHIE was identified as (1) medicine reconciliation (2) identification of drug seekers (3) information on transfers and new patient admissions and (4) public health reporting and queries including immunizations.

Finding #5: Pharmacists use the claims data to identify locations for treatment and pharmaceutical dispensing. The information was used to connect these locations through phone and fax.

These findings closely paralleled those of the Harrison Memorial Hospital focus group.

Rockcastle Hospital, 04/26/12

Rockcastle Regional Hospital and Respiratory Care Center has been providing quality healthcare to Rockcastle and surrounding counties for more than 40 years. Currently the hospital has 26 beds for acute care and a Respiratory Care Center facility that offers long-term care for 93 ventilator-dependent patients. The hospital also offers outpatient surgery and services.

Rockcastle has integrated KHIE through a tab integrated into their EHR. This provides access to pre-fetched CCDs. The CCD has been introduced selectively across the facility, with all physicians having access and select nurses and staff. The focus group consisted of a physician, a nursing clinical supervisor, clinical nurse, infectious disease specialist, a clinical operations manager, pharmacists, and an information systems manager.

Finding #1: Rockcastle learned of KHIE and decided to interconnection when planning for Meaningful Use Stage 1. All subjects indicated that they were comfortable with the technology and that the CCD tab was user friendly.

Finding #2: The KHIE value propositions identified by the subjects include (1) medicine reconciliation (2) medical histories particularly for new patients (3) Infectious disease and public health reporting (4) registries, particularly immunizations. To this point KHIE has not been used for transition-in-care. The administration is concerned about privacy and security and rolling out access incrementally.

Finding #3: A criticism concerned the unpredictability of information being available. "If they (physicians) pull it up multiple times and nothing appears, how many times will they keep doing it?" Suggested a tag when a query fails indicating that the patient is non-Medicaid and no data are available on the system at this time.

Finding #4: The major issues are (1) the inclusion of too much information (claims data) (2) non-sortable (3) information that is not current or timely.

Finding #5: Additional training could be used to for physicians: "More information on what it is and what it could do—this has not been done thoroughly." "Physicians haven't been too informed, but, again, need more information (clinical data) to make it worthwhile."

Finding #6: Potential Meaningful Use penalties were identified as a key part of the HIE value proposition.

Finding #7: Need for timely data emphasized in conjunction with subscription fees. Must have the data in there—would like it as current as possible—within 24 hours ideal—"people will want it."

"We will pay to have valuable information. This is justifiable on reduced staff time running down patient records through phoning and faxing."

Summary:

Although encompassing a small group of early adopters, the focus groups demonstrated the use of KHIE across a range of clinical staff which broadens the value propositions beyond the use of physicians. This potentially greatly increases the value to the participant provider. This suggests considering value propositions on a staff role basis and assistance to Providers in considering the issue of availability and access to KHIE in a roll-out strategy. A limitation to physicians, currently used by some providers, may constrain the value of health information exchange.

Being in a relatively small catchment area, the hospital has different uses of KHIE than the larger hospitals that participated in earlier focus groups under the MTG. This suggests the need for a market segmentation strategy requiring approaches and communication tailored to provider size.

The limitations of the CCD, limited clinical data, and interface/access issues are well known to KHIE and are being addressed by the VHR and an increased availability of pushed data.

The focus group participants are very knowledgeable about KHIE and the CCD and have quickly determined how they believe they can efficiently use the service. This suggests that as KHIE evolves there is going to be a continuing need to educate users to ways in which KHIE can be used in various functional roles.

The successful extension of KHIE to other clinical departments is going to be a critical step. Consideration should be given to how KHIE could best support this process, including recommendations as to timing, best practices by clinical specialty, education, and peer support.

The focus group participants were very positive while also realistic about issues facing KHIE. There are likely best practices that can be extracted and extended to similar Providers. They can also be considered a potential reference site as their user-base evolves.

APPENDIX F

Survey Instrument, Focus Group Protocol, Clinical Outcome Methodology

Survey Instrument, Focus Group Protocol, Clinical Outcome Methodology

This survey is intended to gauge your perceptions of the Kentucky Health Information Exchange (KHIE). It will take approximately 20-30 minutes to complete the survey. For your convenience you may save and return to the survey before submitting it. Thank you again for agreeing to participate in this assessment of the KHIE. Your input is very valuable.

Demographic Questions:

Age: _____

Gender: _____***Male*** _____***Female***

Current Role:_____ ***Physician*** _____***Nurse Practitioner*** _____ ***Nurse***

Years Practicing:_____

How long (in months) have you been using the KHIE?

_____

How long (in months or years) have you been using an Electronic Health Records System?

_____

What Electronic Health Records System does your organization currently use?

_____

(Benefit to Practice) – As a result of the KHIE implementation please indicate how much you agree or disagree with the statement with: (7) strongly agree; (6) agree; (5) moderately agree; (4) are undecided; (3) moderately disagree; (2) disagree; or (1) strongly disagree.

Strongly Disagree Strongly Agree

The KHIE has:

1. Improved access to medical record information. 1 2 3 4 5 6 7
2. Improved workflow 1 2 3 4 5 6 7
3. Improved patient communications 1 2 3 4 5 6 7
4. Improved accuracy for coding evaluation and management procedures 1 2 3 4 5 6 7
5. Improved drug refill capabilities 1 2 3 4 5 6 7
6. Reduced medication errors 1 2 3 4 5 6 7
7. Improved charge capture 1 2 3 4 5 6 7
8. Improved clinical decision making 1 2 3 4 5 6 7
9. Improved claim submission process 1 2 3 4 5 6 7
10. Reduced medical records staff expenses 1 2 3 4 5 6 7
11. Reduced medical records storage costs 1 2 3 4 5 6 7
12. Reduced transcription costs 1 2 3 4 5 6 7
13. Reduced medical records transportation needs 1 2 3 4 5 6 7
14. Helped achieve meaningful use requirements

1 2 3 4 5 6 7

15. Improved physician recruitment

1 2 3 4 5 6 7

(Barriers to Adoption) – As a result of the KHIE implementation, please indicate how much you agree or disagree with the statement with: (7) strongly agree; (6) agree; (5) moderately agree; (4) are undecided; (3) moderately disagree; (2) disagree; or (1) strongly disagree.

Strongly Disagree Strongly Agree

16. There is a lack of support from practice physicians

1 2 3 4 5 6 7

17. There is a lack of capital resources to invest in the KHIE

1 2 3 4 5 6 7

18. I am concerned about my ability to input into the KHIE

1 2 3 4 5 6 7

19. I am concerned about a loss of productivity during transition to the KHIE

1 2 3 4 5 6 7

20. I can easily input historic medical record data into the KHIE

1 2 3 4 5 6 7

21. The available KHIE software meets my organization's needs

1 2 3 4 5 6 7

22. There is a sufficient return on investment from the KHIE system

1 2 3 4 5 6 7

23. There is a lack of support from practice clinical staff

1 2 3 4 5 6 7

24. There is insufficient time to implement the KHIE

1 2 3 4 5 6 7

25. The KHIE can be integrated with the practices billing/claims system

1 2 3 4 5 6 7

26. Practice staff have the skills and training to use the HIE

1 2 3 4 5 6 7

27. There is an appropriate amount of support from the practice administration.

1 2 3 4 5 6 7

28. I am satisfied with the security of the HIE system

1 2 3 4 5 6 7

29. There is a lack of support from practice clinical staff

1 2 3 4 5 6 7

30. There is insufficient time to implement the HIE

1 2 3 4 5 6 7

31. There is a lack of support from practice nonphysician providers

1 2 3 4 5 6 7

32. The KHIE can be integrated with the practices billing/claims system

1 2 3 4 5 6 7

33. I would be willing to pay a service fee for the KHIE

1 2 3 4 5 6 7

34. The KHIE can be integrated with our current Electronic Health Records system

1 2 3 4 5 6 7

35. My colleagues would be willing to pay a service fee for the KHIE

1 2 3 4 5 6 7

36. Have you utilized the KHIE help desk?

Yes No

If you have used the HIE helpdesk since the implantation process began, please answer the following questions:

37. The KHIE helpdesk was available when I needed it.

1 2 3 4 5 6 7

38. The KHIE helpdesk was able to address my questions in a timely manner

1 2 3 4 5 6 7

39. The KHIE helpdesk sufficiently addressed my questions

1 2 3 4 5 6 7

(Open-ended responses) In a few sentences, please answer the following questions.

1. Please describe your experience with the training and implementation process of the Kentucky Health Information Exchange. How much support did you receive during the implementation process?

2. How often do you utilize the KHIE? Do you think that will increase or decrease in the future? Why or why not?

3. What are the advantages of the KHIE as you currently utilize it?

4. What are the disadvantages of the KHIE as you currently utilize it?

5. Has the use of KHIE changed how you have treated a patient?

6. What suggestions do you have for improving the KHIE?

7. Other thoughts or suggestions?

That concludes the survey. Once again, thank you for your time and effort. Your thoughts and ideas are essential and appreciated.

Focus Group Protocol

1. ***Introduction***

- Tell me a little bit about yourself including: your role here, how long you have been practicing, how long you have been at this facility, and your overall comfort with technology in your workplace.

2. ***Implementation***

- When did you learn about the Kentucky Health Information Exchange (KHIE) being implemented?
- Can you describe your experience with the training and implementation process?
- What were some of the obstacles you faced during implementation?
- How much support (including type of support) did you receive during the implementation period?

3. Attitudes Toward Adoption

- How do you feel about your current EHR system? Are you comfortable with the technological aspects of your work?
- What are your views of the feasibility of the KHIE?
- Do you think the KHIE will be successful? Why or why not?
- Do you think the KHIE is a worthwhile endeavor? Why or why not?

4. Barriers To Adoption

- Do you think you will utilize all of the functions of the KHIE? Why or why not?
- Do you think your peers will utilize the functions of the KHIE? Why or why not?
- Who do you think will most benefit from the KHIE?
- How often do you currently utilize the KHIE? Do you think that number will decrease or increase in the future?

5. Perceived Advantages/Disadvantages of the KHIE

- What are your perceived advantages of the system (as it is today)?
- What are your perceived disadvantages of the system (as it is today)?

6. Suggestions for the KHIE

- Can you provide suggestions for improvement including:
    - Implementation and Training Suggestions
    - Support Suggestions
    - Technological Suggestions
    - Cost Suggestions
    -

7. Other thoughts, stories, frustrations concerning the KHIE?

Survey Solicitation

You are invited to participate in a study intended to learn more about your experience with the Kentucky Health Information Exchange (KHIE). The study will consist of participating in an online survey. Your identity will remain anonymous. Dr. Gary Ozanich, the Director of Strategic Initiatives for the College of Informatics and Dr. Andrea Lambert from the Department of Communication at Northern Kentucky University will be conducting the study. The study's principal investigator is Gary Ozanich, College of Informatics ST 280, Northern Kentucky University, Highland Heights, KY 41099, 859-572-1397.

You may or may not personally benefit from this study. However, by serving as a participant, you will contribute to new information about the viability of the Kentucky Health Information Exchange. Keep in mind that participation is voluntary and that you do not have to participate. In order to be eligible for the study you must be at least 18 year old, be a clinician, and practice in the Commonwealth of Kentucky. You will be asked to participate in an online survey that will last no more than 20-30 minutes.

You do not have to join this or any research study. If you do join, and later change your mind, you may quit at anytime. If you refuse to join or withdraw early from the study, there will be no penalty or loss of any benefits to which you were otherwise entitled. The information you put forth will be held anonymous.

There are few foreseeable risks to participating in this research study. You may experience stress or anxiety if thinking about the Kentucky Health Information Exchange is difficult for you. If you have any concerns or complaints about how you have been treated during this research project, please contact Dr. Philip J. Moberg, Chair, NKU Institutional Review Board, 859-572-1913, mobergp1@nku.edu. Additionally, you may contact Barbara Heil, Kentucky Health and Family Services, 502-564-2611. If you have any questions about your rights as a research subject, you may contact the Cabinet for Health and Family Services Institutional Review Board, 502-564-5497 x4102.

The information obtained from this study may be used for presentations in undergraduate and graduate classes, state reports and presentations, at professional organizations, and professional publication. If you would like to discuss any issue related to this study, please feel free to call Dr. Andrea Lambert at 859-572-6615.

Your willingness to complete the survey serves as your consent to participate in this research study.

Clinical Outcomes

A robust set of clinical applications and measures is required by the KHIE Development and Implementation Contract. As a forerunner to the KHIE, the MTG HIE will phase in these applications with the databases being initially populated with claims data. This analysis will focus on the relationship of the MTG HIE and clinical outcomes relative to these disease states:

1. Diabetes
2. Asthma
3. Cardiovascular Disease

Research Questions

1. What effect does the use of MTG HIE have on the trends and/or measurement of key clinical indicators for each of the disease states for Medicaid-insured patients?
2. Does the use of the MTG HIE result in a change in the hospital admission/readmission rate by Medicaid-insured patients?
3. Does the use of the MTG HIE result in a change in the visit rate to ED/urgent care by Medicaid-insured patients?
4. Does the use of the MTG HIE have an effect on the time between episodic events for each of the disease states for Medicaid-insured patients?

Research Methods

Given the phasing-in of applications over the course of the implementation, the assessment will initially focus on measurement trends in claims data with an evolution toward comparing clinical data as they become available. The principal methodologies to be utilized will the tracking and comparison of claims data. Clinical measures will by tracked and compared as they become available. A random sampling of records for data abstraction will be used as a baseline. Measures will be linked to the disease state and patient demographics. Appropriate statistical methods will be applied as supported by the robustness of the data.

Summary of Clinical Outcomes Assessment

Domain	Method	Measurement
Clinical Indicators	Claims/EHR/CCD Analysis; Medical Record Abstraction (when available)	Disease Specific Indicators *Diabetes*: HbA1c tested/measurements Lipid/Triglyceride Profiles Eye Exam Nephropathy monitored *Asthma:* Appropriate Medication Seasonal flu shots *Cardiovascular:* Achievement and Quality Measures per Medicare
Hospital Admission Rate	Claims Data	Admission and Length of Stay
ED/Urgent Care Visit	Claims Data	Visit to Facility
Episodic Events	Claims Data	Times between acute treatment

APPENDIX G

Section 3.4 – Evaluation Result Tables

LAB CENSUS RESULTS: QUESTION 1		
Q1. Which option below best describes your laboratory's organizational affiliation or ownership?		
Answer Options	**Response Percent**	**Response Count**
Affiliated with a University/Academic Center	3.9%	5
Clinic or Group Practice	7.0%	9
Hospital or Health System	79.1%	102
Laboratory Corporation of America (LabCorp)	3.1%	4
Non-academic affiliated laboratory	0.8%	1
Quest Diagnostics	1.6%	2
Other (please specify)	4.7%	6
	Answered question	129
	Skipped question	2

LAB CENSUS RESULTS: QUESTION 2		
Q2. Please estimate the total of ALL billable tests your laboratory received from ambulatory providers during calendar year 2011 (that is, from January 1, 2011 to December 31, 2011).		
Answer Options	**Response Percent**	**Response Count**
Fewer than 100,000 billable tests	43.0%	65
100,000 –499,999 billable tests	40.4%	61
500,000 –999,999 billable tests	9.3%	14
1,000,000 or more billable tests	7.3%	11
	Answered question	151
	Skipped question	2

LAB CENSUS RESULTS: QUESTION 3								
Q3. Please estimate the proportion of test results that your laboratory sent to ambulatory providers outside your organization following LOINC standards. Consider only results during calendar year 2011.								
Answer options	**0%**	**1-24%**	**25-49%**	**50-74%**	**75-99%**	**100%**	**Don't know**	**Response count**
LOINC	80	17	8	10	8	8	13	144
							Answered question	144
							Skipped question	9

LAB CENSUS RESULTS: QUESTION 4		
Q4. During calendar year 2011, did your laboratory send lab results to ambulatory providers outside your organization electronically in a structured format? Do not include fax machines.		
Answer Options	**Response Percent**	**Response Count**
Yes	46.0%	64
No	52.5%	73
Don't know	1.4%	2
	Answered question	139
	Skipped question	14

LAB CENSUS RESULTS: QUESTION 5								
Q5. If your laboratory sent structured results to ambulatory providers outside your organization electronically in 2011, please estimate the proportion of final lab results sent to Electronic Health Records (EHRs) and web portals. (Please check no more than one box per row. Percentages may add up to more than 100%.)								
Answer options	**0%**	**1-24%**	**25-49%**	**50-74%**	**75-99%**	**100%**	**Don't know**	**Response count**
Electronic delivery to Electronic Health Record (EHR)	70	19	8	6	12	9	14	138
Available on web portal	89	7	4	2	9	10	16	137
Other method (Ex. Printer, fax)	21	25	9	13	30	28	11	137
Comments								32
							Answered question	139
							Skipped question	14

LAB CENSUS RESULTS: QUESTION 6		
Q6. Has your laboratory implemented the LRI guide for lab result content and format?		
Answer Options	**Response Percent**	**Response Count**
Yes	3.7%	5
No	54.4%	74
Don't know	41.9%	57
	Answered question	136
	Skipped question	17

LAB CENSUS RESULTS: QUESTION 7				
Q7. Please indicate which of the following Health Level 7 (HL7) message standards are currently used by your organization to send lab results to ambulatory care providers.				
Answer Options	**Yes**	**No**	**Don't know**	**Response Count**
HL7 2.3.1	18	50	64	132
HL7 2.5.1	14	54	63	131
Other	12	32	32	76
Comments				13
			Answered question	134
			Skipped question	19

LAB CENSUS RESULTS: QUESTION 8		
Q8. If your organization does send lab results electronically outside your organization, who do you use to provide connection to send the message?		
Answer Options	**Response Percent**	**Response Count**
KHIE	12.0%	17
Healthbridge	0.7%	1
Proprietary Network	23.2%	33
Do not use electronic delivery outside our organization	28.2%	40
Other (please specify)	35.9%	51
	Answered question	142
	Skipped question	25

LAB CENSUS RESULTS: QUESTION 9		
Q9. How familiar are you with the Kentucky Health Information Exchange?		
Answer Options	**Response Percent**	**Response Count**
Very familiar	14.3%	19
Somewhat familiar	23.3%	31
Not very familiar	30.8%	41
Not at all familiar	31.6%	42
	Answered question	133
	Skipped question	20

APPENDIX H

GOEHI Privacy and Security PIN Exhibits

1. PDF Attachment 1: GOEHI Privacy and Security PIN Exhibits 1-4
2. PDF Attachment 2: GOEHI Privacy and Security PIN Exhibits 5-7
3. PDF Attachment 3: GOEHI Privacy and Security PIN Exhibits 8-10

Note: These documents have been submitted in three separate PDF files along with the original copy of the Updated Strategic and Operational Plan for HIE in a Zip file due to the large size of the PDF files.